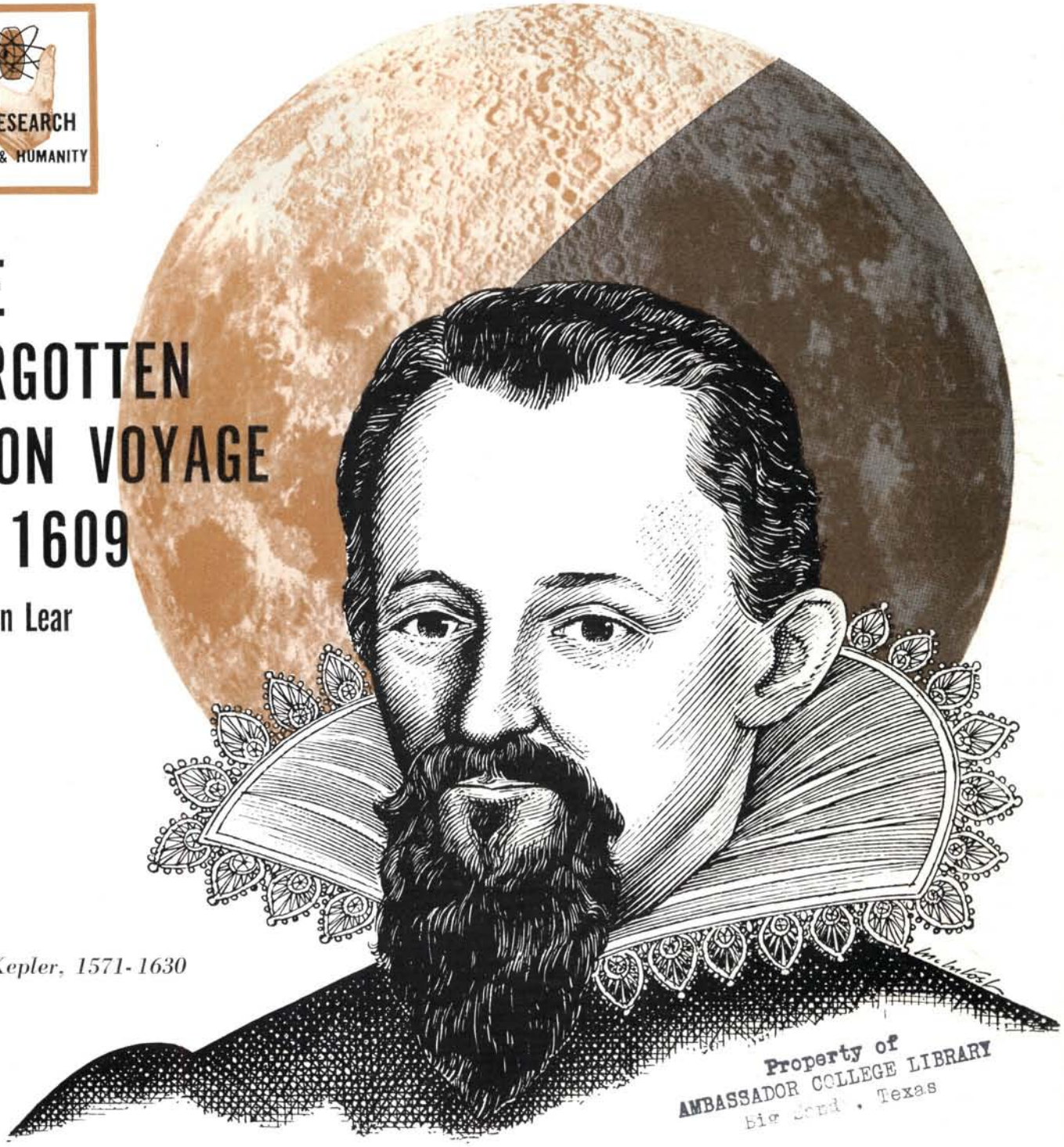
Saturday Review

MAY 4, 1963 / 25¢

SR / RESEARCH
SCIENCE & HUMANITY

THE FORGOTTEN MOON VOYAGE OF 1609

By John Lear



John Kepler, 1571-1630

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A STRATEGY FOR AMERICAN SECURITY

A Symposium Edited by Seymour Mel

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MRS BOWER ALY
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EUGENE OREG
SR91007

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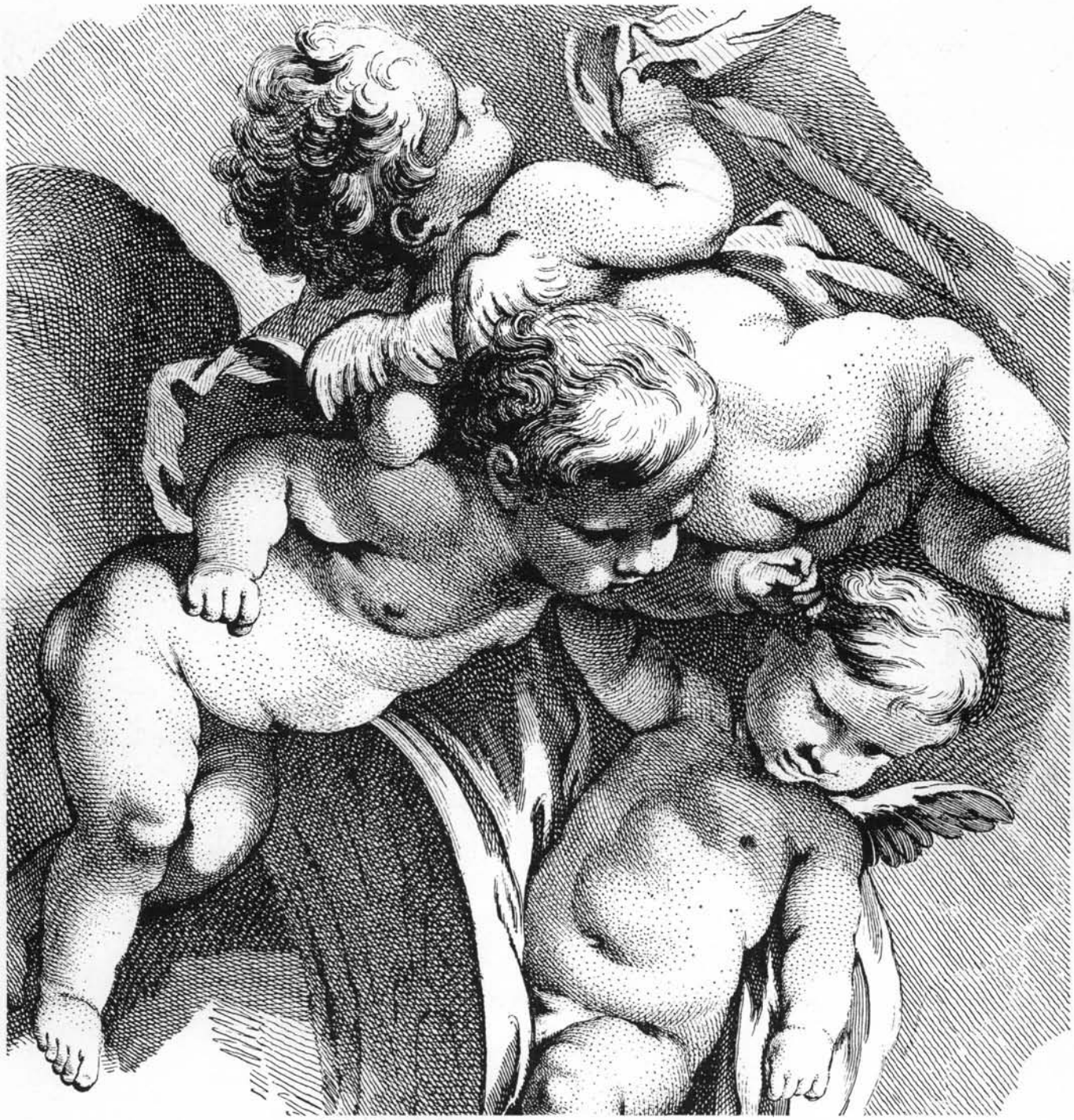

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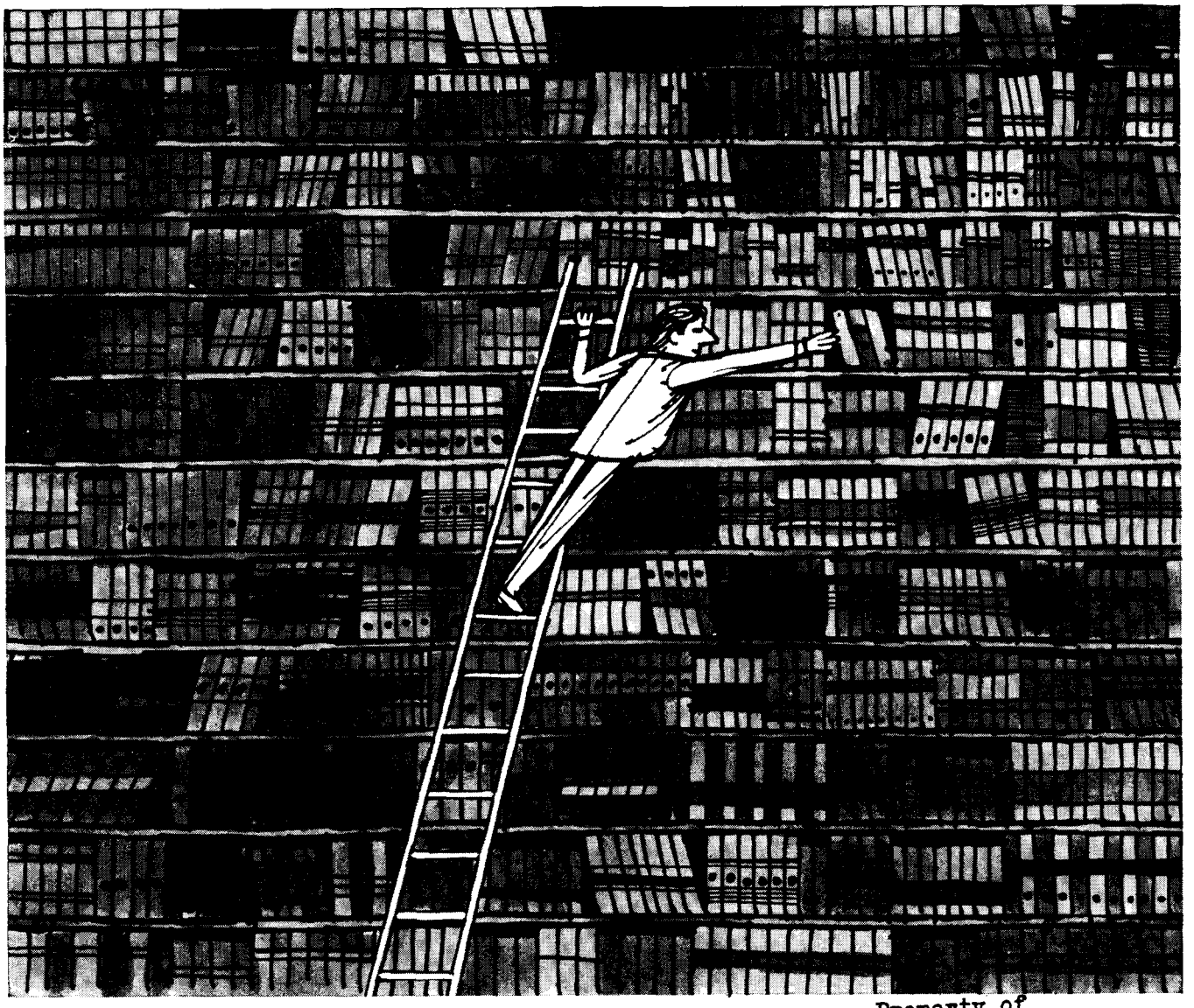

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Walter Lippmann, 1963
Comment on issues, men, and events.
Wednesday, May 1 (7:30-8:30 PM)

The Voice of Charlie Pont
An Ivy League drifter stirs old fires.
Bradford Dillman and Diana Hyland.
Thursday, May 2 (10-11 PM)

The Kentucky Derby
Saturday, May 4 (5-6 PM)

Beyond the Sanctuary
Church work by laymen in France, England, Germany, and California.
Sundays, May 5-12-19-26 (10:30-11 AM)

I Am with You
History of the Ecumenical Councils.
Sundays, May 5-12-19-26 (1:30-2 PM)

The Theatre of Tomorrow
Preview of Lincoln Center's Vivian Beaumont Repertory Theatre.
Sunday, May 5 (2-3 PM)

Money for Burning
Study of U.S. Secret Service activities against counterfeiting.
Tuesday, May 7 (10:30-11 PM)

The Land Swindlers
Drama on shady real estate practices.
Wednesday, May 8 (10-11 PM)

The Airport Jam
Sunday, May 12 (6-6:30 PM)

The Bob Hope Show
Guests: Patti Page, Arnold Palmer, and James Garner.
Wednesday, May 15 (9-10 PM)

The Kremlin
The focal point of eight centuries of Russian history viewed from the scene.
Tuesday, May 21 (9:30-10:30 PM)

Blind Boy
Documentary study of the life of the blind in our society.
Tuesday, May 21 (10:30-11 PM)

The Quiet Revolution
Growth of the clergy's social role.
Friday, May 24 (10-11 PM)

The "Emmy" Awards
Sunday, May 26 (10-11:30 PM)

Regularly Scheduled Programs

Monday to Friday: Continental Classroom: Atomic Age Physics & American Government/ College of the Air: The American Economy/ Today/Calendar/Discovery '63

Mondays: David Brinkley's Journal

Tuesdays: Chet Huntley Reporting

Wednesdays: CBS Reports

Fridays: Eyewitness

Saturdays: Watch Mr. Wizard/Exploring

Sundays: Camera Three/Meet the Professor/ Adlai Stevenson Reports/Issues and Answers/ Update/College Bowl/The Twentieth Century/ Meet the Press/Walt Disney's Wonderful World of Color/Voice of Firestone/Howard K. Smith —News and Comment

NOTE: Times (*EDT*), programs, titles, and casts are subject to change. Please consult local listings.

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Saturday Review

May 4, 1963

Cover drawing by Hal McIntosh, from a sketch on jacket of Dr. C. Doris Hellman's English translation of Max Caspar's *Kepler.*

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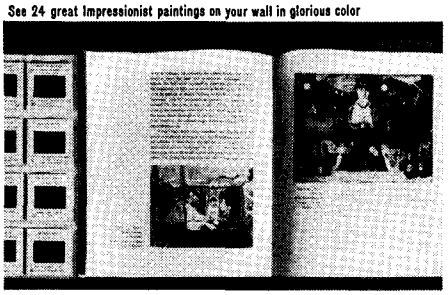

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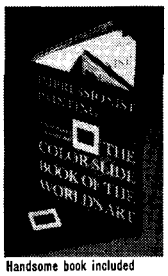

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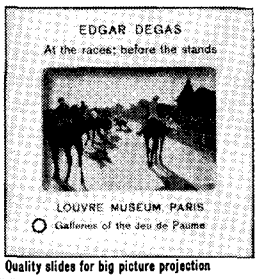

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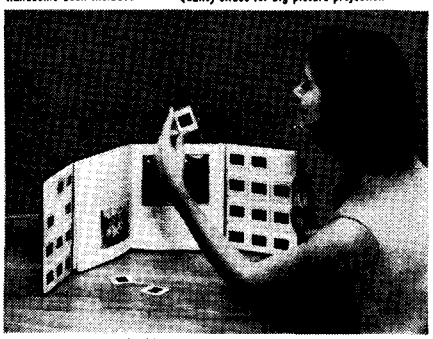

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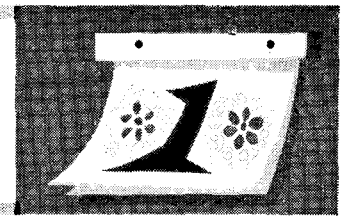
First of the Month



IN HONOR of the merry month of May we thought you might be interested in one columnist's "letterature":

Dear Mr. A.:
My son is an actor and he needs publicity. Who is your favorite publicist?

Mrs. H.S.

Louisville, Ky.

My favorite publicist is the peerless Jim Moran—but we'll warn you, he weighs 200 pounds and will expect a fat fee. "There have been various ages of man," he has said. "The Dark Ages, the Age of the Reformation, etc. Well, this is the Skinny Age. Everybody is getting thin. Thin men wear thin suits with thin lapels and carry thin briefcases. They marry thin women and live in thin apartments with thin walls. They drink thin martinis in thin-stemmed glasses and watch TV dramas with thin plots."

And what does Moran purpose to do about this? "I'm going to get fat," he says. "I'm going to wear fat suits with fat lapels and carry a fat briefcase. I'm going to marry a fat wife and live in a fat apartment and eat fat steaks and read fat books."

• • •

Dear Mr. A.:
There are now seven bills before Congress for the protection of laboratory animals. How do you feel about this?

G.W.T.

San Francisco, Calif.

I am not an antivivisectionist (and neither, for that matter, are any of the bills before Congress antivivisectionist bills), but there are some 300,000,000 animals in the medical and business research laboratories of this country, and the callous indifference to their suffering, combined with the ridiculous repetition of a large part of the experimentation, dictates that something must be done. Today literally anything goes in the way of "research projects" under the Great God Science, and until the public wakes up and takes a closer look at what its charitable donations are being used for, it is up to the Congress to step in. The best of the bills, and the one recommended by the country's only truly national humane organization, is the Randall Bill. We suggest that before writing to your Senator or Congressman, however, you get the facts by writing to the Humane Society of the United States, Washington 6, D. C.

• • •

Dear Mr. A.:
How do you feel about boxing?

N.C.

Greenwich, Conn.

I feel that eventually it should be abolished—and meanwhile the fan entering the turnstile should be given one punch at exactly the same speed a fighter undergoes. However, when we asked Gene Tunney about this, his answer was as follows: "Boxing is as old as civilization. Homer wrote about it, and it was the same kind of pugilism we have today. If they mean to abolish all kinds of boxing, it's time to go to another planet. But if they mean to clean it up, that's another matter. The best thing they could do for the protection of the fighters is to get it off television. These boxers today are all television boxers. They don't have the experience and they don't have the training and development."

• • •

Dear Mr. A.:
How do you feel about Jack Paar's blasts at you?

Mrs. R.L.

Framingham, Mass.

I think Mr. Paar is almost always right on the subject of animals and almost always wrong on the subject of people. In this particular case he was cross with me for suggesting that he had started the trend of the *Tonight* show becoming the American Know-Nothing Party of this century, and that even the most obvious fact was greeted with an enthusiasm hitherto reserved for the Second Coming—not, we hope, Mr. Paar's.

• • •

Dear Mr. A.:
Have you followed the controversy in the *Harvard Alumni Bulletin* over the question of whether or not President Kennedy should, as President, resign from Harvard's Board of Overseers?

R.A., Jr.

Washington, D.C.

We have indeed. And we hereby quote part of the original letter (which started the controversy) in the *Harvard Bulletin:*

To the Editor of the BULLETIN:
The responsibilities and powers of the Board of Overseers of Harvard College are very substantial. The exercise of the Board's functions is a many-faceted thing. Its collective judgment in the resolution of a question of basic policy can have (as it often undoubtedly has had) a profound effect upon the character of the entire Harvard establishment. It follows that it is desirable that each member of the Board should count among his qualifications such elements as understanding of the character and scope of a great University, familiarity with its administrative problems, a grasp of its relation to an ever-changing world, etc. Above all, perhaps, a member of the Board should certainly be characterized by complete independence and freedom of judgment, unimpeded devotion to the welfare of the University, disinterestedness, and the capacity to perform his duties whenever necessary, unhindered by preëmpting demands from other interests and allegiances to other preoccupations which might create *conflicts*, whether moral, intellectual, or economic.

John F. Kennedy has continued to serve as a member of the Board of Overseers since his inauguration as President of the United States. One might well ponder and critically examine the question of whether a man who wears these two hats simultaneously in this decade can be sure that he can do so properly.

The Government of the United States, through its innumerable agencies and administrative proliferations, makes contractual awards of many kinds to Harvard. The general vexatious problem of what and how much Federal aid to what education and to which institutions is too familiar. Is there a distinction between the President of the United States *qua* member of the Board of Overseers, and the President of the United States were he a member of the Board of Directors of the United States Steel Corporation? Is there the possibility of conflict of interest here? And should a conflict arise in the course of deliberation at a Board meeting relating to such a subject matter, would the member who also happened to be President of the United States disqualify himself? And would his fellow members be . . . influenced by what they might have reason to believe would be the view of the member-President . . .?

There must be other questions in this area. It would be interesting to hear from alumni on the subject.

T. N. STENSLAND '28

Scottsville, Va.

—CLEVELAND AMORY.

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THE POETRY OF Robert Frost

Constellations of Intention

by REUBEN A. BROWER

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"THE GATES OF HORN is a critical study, grounded in literary history, of France's great novelists from Balzac to Proust — including Stendhal, Flaubert, Zola. It is in effect a vivid series of critical portraits. Harry Levin's wit is the wit of juxtaposition; his unerring discernment of congruities among such incongruous temperaments is a constant delight to the intellect. Written with elegance and irony, the book is a searching inquiry into realism in the novel and the way in which these writers read life into literature and literature into life. We have had no work quite like it since Edmund Wilson's *Axel's Castle.*"— LEON EDEL. $8.50

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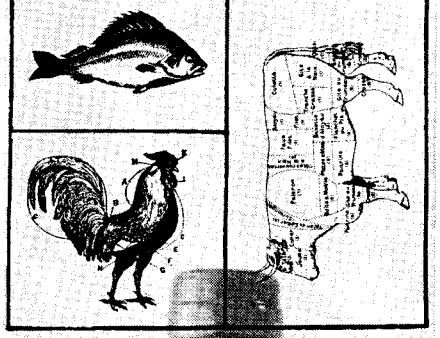

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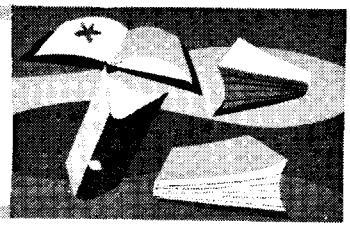
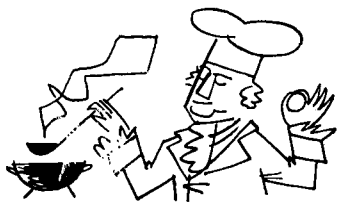


NOW THAT THE APRIL THAW has come and gone, the mail pouch gets through more easily, and there is a great deal to catch up on. Reader Bernie Burroughs advises us that he's discovered in a collector's catalogue that Dwight D. Eisenhower's signature on a hand-



written note will cost you more than an original George Washington, at least in certain cases. You can blame part of this on the fact that modern Presidents seldom have the time to write their notes by hand, say the dealers.

Reader Ellen Frank has another bit of information for us on George Washington. It seems he came up with a poultry recipe that greatly increased the efficiency of his men: Chicken catch-a-Tory.

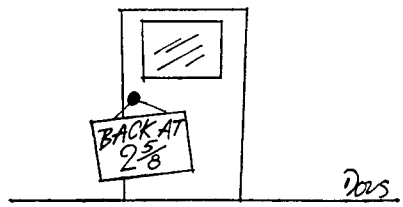
IT'S DOLLARS TO DOUGHNUTS that you have not heard about the bakery in West Springfield, Massachusetts, that reader Margaret Bigelow writes us about. The bakery's doughnut package bears the legend: "What foods these morsels be."

Doubleday-Image books get around quite a bit, but seldom in more appropriate circumstances than occurred recently. Linda Cohen, of that organization, writes us that a strap-hanger on New York's Lexington Avenue IRT subway was observed in the crush of the morning rush reading, of all things, *We Die Standing Up.*

FOR THE "Additional Dialogue" Department, Motion Picture Screen Credit Division, reader Martin Gross poses an interesting question. He notes that Lancer paperbacks has just published a book entitled *The Raven,* adapted by Eunice Sudak from the Richard Matheson screenplay version of the poem, which, we finally discover at the bottom of the credits, was written by Edgar Allan Poe. "Now, since *Barnaby Rudge* is thought by some to be the inspiration for *The Raven,*" our reader asks, "shouldn't Charles Dickens get some credit somewhere?"

Leo Goldman, an associate professor at Brooklyn College, is not worried about Charles Dickens. As a teacher of guidance counselors, he is more interested in occupations. His main concern is the effect of extensive travel on baseball officials who wither in the autumn, and are not heard from until spring. The title of his thesis: *The Decline in Fall of the Roaming Umpire.*

FREE ENTERPRISE is still going strong in the mail these days. Cornelius Lombardi tells us he is anxious to start an elevator company for your very own use, to be called the Petard Elevator Corporation. And reader A. L. Foss has a ready-made slogan for the Dachshund Breeders Association (Get a long little doggie), to say nothing of a planned enterprise called the Meaning Watch Company (Every little Meaning has a movement of its own).



OUT IN BERKELEY, California, Mrs. James R. Birnberg writes us that she's a little bit puzzled about a truck whisking about the streets bearing the sign: THE LENNOX PHOTOSTATIC SERVICE—THE MODERN WAY TO REPRODUCE. "Is this something we don't know about?" she asks.

Reader Allan Kalmus swears he saw a sign on the desk of a security analyst down on Wall Street reading: OUT TO HUNCH.

Acting on a hunch of his own, reader William Baffa tells us he went to a seance at which the Immortal Bard was conjured up to intone these words:

O, would these bones were left to rest
And that some worthier task were taken
By every snooping, snouted pest
Who tries to prove that I was Bacon.

NOT TOO LONG AGO, the mail pouch brought us a copy of the first isometric —or combination birds-eye and giraffe's —eye view—map of Manhattan issued since 1886. And a handsome map it is, on which you can practically spot any

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office or hotel window to circle and mark "My room."

The map is the work of a West German artist named Hermann Bollmann, who spent five years as a POW of the Russians, then emerged to revive the art of isometric maps. Bollmann, who had never been to New York before, took 17,000 exposures of Manhattan from a light Cessna, plus an equal number from a sun-roof Volkswagen, covering every street and avenue shown on the map. The resulting color sketch gives the impression of floating over Manhattan in a hybrid of a Volkswagen and a helicopter.

A crew of twelve men worked nine months to complete the art work back in Germany, and the original sketches finally formed a mural fourteen by eighteen feet. Bollmann, one of the few experts on this type of map, was insured for $250,000 while he was putting the map together.

Unlike an ordinary aerial photo, an isometric map seems to have an infinite number of viewpoints. The detail is extraordinary. If you look closely you can see a baseball diamond at 11th Avenue and 53rd Street, and count the fence posts around the plot.

MAPS ARE ALWAYS fascinating, but sometimes they are not put to use, according to a note from James N. Burke. He writes us about a horse who was so intelligent that it made its owner feel inferior. In fact, the owner let himself get lost rather than offer the horse a map, feeling the horse might show him up. Said he: "I didn't want to put the cartography before the horse."

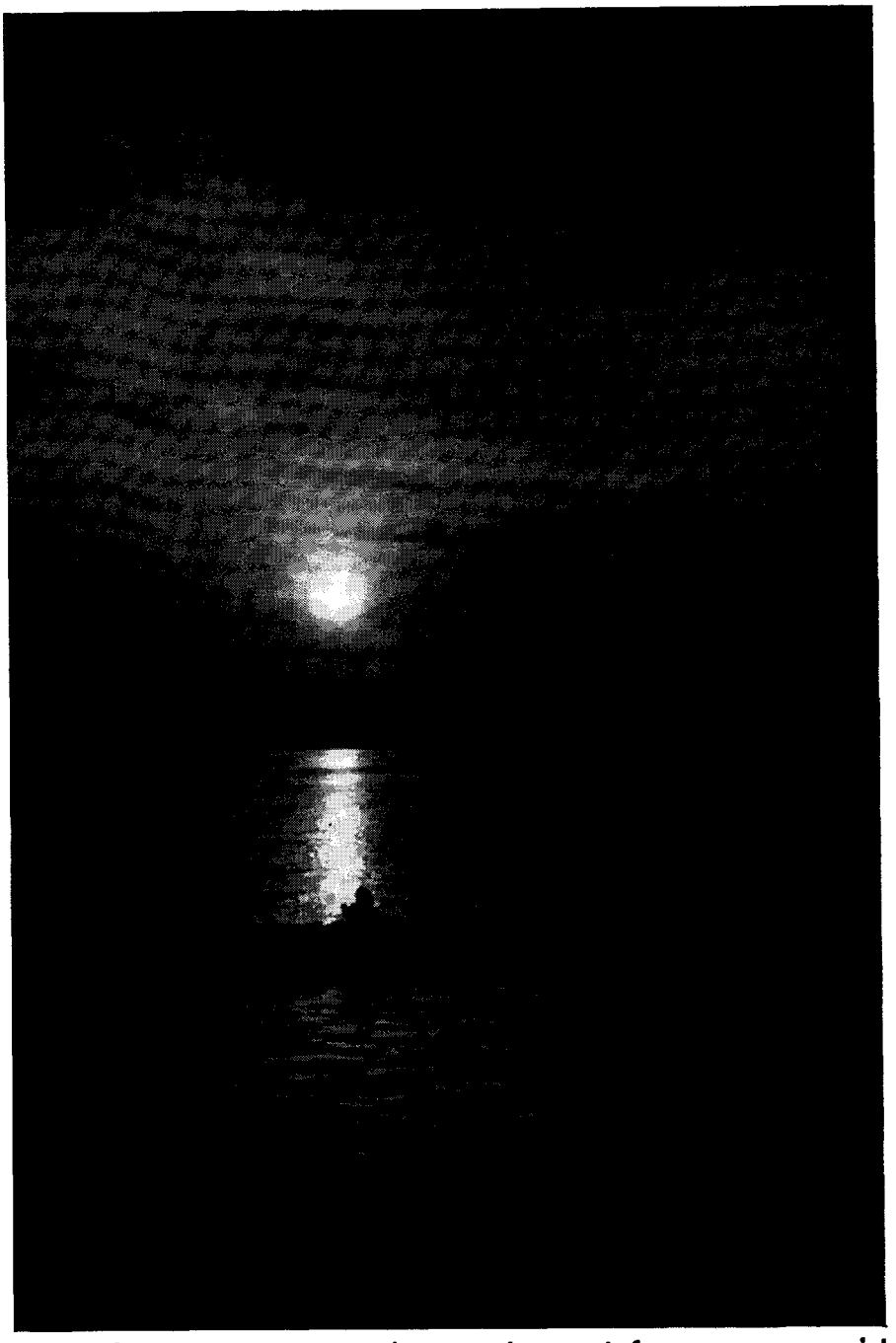
A FRIEND OF OURS hasn't had any takers yet for the motto he's offering, free of charge, to any toothpaste manufacturer who wants it: "For a good paste in the mouth, try. . . ." He also has a title for a book about those patriotic organizations that try to censor books: *The Star-Spangled Banners.*

—JOHN G. FULLER.

SOLUTION TO LAST WEEK'S KINGSLEY DOUBLE-CROSTIC (No. 1516)

(RAYMOND) KENNEDY:
MY FATHER'S ORCHARD

Often I walked out that way and would sit quietly and wait for the birds and squirrels that had vanished at my coming. Such a hectic frenzy seemed to surround their lives that you could not help wondering what gigantic plan issued and sustained them.



Indeed, you may hear a lament from a mermaid

"Beware the magic spell of Venice" may sound like an old wives' tale to you.

But better heed the warning when you view Venice beneath a full moon. Then, the centuries-old grandeur so enchanting by daylight becomes bewitching.

Unless you take care, the play of light upon the water may play tricks on your imagination. You may see the ghost of Casanova stalking the balcony of the filigree Doges' Palace. Indeed, you may hear a lament from a mermaid languishing on The Lido or a sigh from "The Bridge of Sighs."

By daylight, too, you'll become so imbued with the beauty of Venice you'll never want to leave. But take heart. You can take home treasures of glass and heirlooms of lace as mementos of your magic moments.

Risk a sojourn in Venice this Spring or Fall when there's a full moon. Ask your travel agent for details. Or write: Italian State Tourist Office, 626 Fifth Avenue, New York; Ente Provinciale per il Turismo; or Ufficio Comunale Turismo, Venice, Italy.

VENICE

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Saturday Review
MAY 4, 1963

A STRATEGY FOR AMERICAN SECURITY

A task force of independent specialists, arguing that U.S. military policy has reached a point of diminishing returns, offers a blueprint for renewing American leadership.

1. Military Power and Money

By SEYMOUR MELMAN

AMERICAN military overkill capability now exceeds almost anyone's comprehension. The idea of "overkill" is a thermonuclear invention. Never before could one conceive of a military power sufficient to kill a population more than once.

About 3,400 strategic weapons—major aircraft and missiles—are now available to the U.S. Air Force and Navy. These major vehicles can deliver warheads with explosive power equivalent to 22 billion tons of TNT. The bomb dropped on Hiroshima, which killed 100,000 people, was the equivalent of 20,000 tons of TNT. The stockpile of nuclear warheads is probably twice the number deliverable by the major aircraft and missiles now on hand.

To determine the possible military significance of this much nuclear power, let us consider some calculations that are at once nightmarish and realistic. For this purpose we will designate the relationship—100,000 persons killed by 20,000 tons of TNT—a "Hiroshima equivalent."

On the entire surface of the earth there are now about 2,000 cities of over 100,000 population. These cities have a total population of about 600 million. If every one of these cities were a target for nuclear destruction, given an allowance of 30 per cent failure to deliver to target, United States strategic vehicles alone could deliver the equivalent of 2,500,000 tons of TNT for each 100,000 inhabitants—or 125 "Hiroshima equivalents." This means, in effect, that the United States at this time possesses, on a global scale, an overkill capability of 125 times.

In the Sino-Soviet bloc, the population of approximately 370 cities equals approximately 1,400 "Hiroshima equivalents." Again, allowing for 30 per cent failure of delivery weapons, U.S. overkill capability for the entire Sino-Soviet area is 500 times.

Finally, the Soviet Union alone contains roughly 140 cities of 100,000 population or over—altogether approximately 500 "Hiroshima equivalents." Allowing 50 per cent failure to deliver warheads, the U.S. alone could deliver about 25,000,000 tons per "Hiroshima equivalent," amounting to a U.S. overkill capability of 1,250 times.

In these calculations, we have excluded any contribution that might be made by fighter planes, intermediate and short-range missiles, torpedoes, mines, cannon, and tactical rocket launchers like the "Davy Crockett."

It is possible to estimate U.S. overkill capability on the basis of other assumptions. For instance, if one assumes that one megaton (one million tons of TNT equivalent) is the average yield of an ICBM warhead, and that a one-megaton bomb is the size most likely to be delivered to most cities of 100,000 or more population, then the following results would obtain:

► For the 2,000 major cities of the world, the U.S. has an overkill capacity of 7.6 times, allowing for a 30 per cent failure of delivery systems.

SEVERAL MONTHS AGO Seymour Melman, author of *The Peace Race* and Professor of Industrial and Management Engineering at Columbia University, called together a task force of independent specialists to explore an urgent theme: the relationship of America's growing military budget to the fundamental need to strengthen our national security. The questions before the panel were: Has United States military policy reached a point of diminishing returns? Are there more efficient ways of moving toward our goals? As Melman says, "To meet the challenge of a constructive American program in support of freedom, based upon the still unmatched industrial system of the United States, the Soviets would be compelled to take disarmament far more seriously than they do now. For otherwise, the continued strain upon their resources, making it impossible for them to meet a bold U.S. economic challenge in the world, could force the Soviet Union into a permanently second-class political and economic position."

Simultaneous with its publication in abridged form here, the complete report is being presented to the U.S. Congress and to key members of the government.*

The authors, in addition to Melman, are: John E. Ullmann, Professor of Management at Hofstra University; William Vickrey, Professor of Economics at Columbia University; Otto Feinstein, Assistant Professor of Political Science at Wayne State University; Edwin Lieuwen, Professor of Latin American History, University of New Mexico; Terence McCarthy, vice-president, Basic Economic Appraisals, Inc.; and Dr. Benjamin Spock, Professor of Child Development, Western Reserve University Medical School.

*Copies of the complete report may be obtained from Lee Service (Dept. ST), 48 East 21st Street, New York 10, N.Y. Price: 50 cents each; bulk rates on request.

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► For the 370 major cities of the Sino-Soviet bloc, the U.S. has an overkill capacity of 41 times, allowing for a 30 per cent failure of delivery systems.

► For the 140 major cities of the Soviet Union, the U.S. overkill capacity is 78 times, even allowing for a 50 per cent failure of nuclear warhead carriers.

Within any technically plausible framework of reasoning, the conclusion is that the U.S. possesses overwhelming nuclear destructive capability. If the size of these forces seems unreasonable, it is all the more striking when it is understood that they were designed by men whose avowed purpose was to erect a retaliatory force of such power as to make a "nuclear Pearl Harbor" attack on the United States patently unworkable, and thereby preserve the peace. It seems that the institutional machine, once set in motion for these purposes, developed a momentum of its own to generate the present condition of overkill.

The destructive capability of Soviet forces is estimated by the same reasoning applied to U.S. forces, with some modifications. On the same basis as our first set of calculations, the Soviet Union would have the following capabilities:

► For the 2,000 cities in the world of 100,000 or more population, no overkill capacity if a 30 per cent failure is applied to delivery systems. This is so because with about 2,500 delivery vehicles, 30 per cent losses would leave less than one vehicle per target. However, if one figures, arbitrarily, a failure rate of 20 per cent, then USSR delivery capability would be 3.2 megatons per 100,000 persons in the major cities, or an overkill of 160 times.

► For the 404 NATO-area cities of 100,000 people or more, the Soviets could deliver about nine megatons per 100,000 city people, allowing for a 30 per cent failure of delivery systems. This is an overkill of 450 times.

► For the 192 U.S. cities of 100,000 or more, USSR medium-range vehicles are excluded and a failure of 50 per cent is assumed. Yet the Soviets could deliver about 2.9 megatons per 100,000 city people—an overkill factor of 145 times.

NATO forces now total 5,900,000 persons, of whom 2,800,000 are Americans. Total Western alliance forces are at present 6,600,000. When forces of Japan, Taiwan, and South Korea are added to these, the armed forces of the U.S. treaty powers come to a grand total of 8,000,000.

Communist-bloc forces now total 7,700,000. Of these, the USSR accounts for 3,600,000; the USSR plus Warsaw Pact nations, 4,600,000; China, 2,400,000. North Korea, North Vietnam, and Cuba account for 700,000. Thus the West clearly surpasses the East in military manpower.

THE Administration budget for fiscal 1964 requests authorization for spending $56.7 billion. The implication is that our available overkill capability is insufficient and needs to be enlarged.

Until recently, the "counterforce" concept of national security has appeared to have the full endorsement of the Secretary of Defense. This policy scheme includes the development of nuclear military capability of sufficient strength to overwhelm Soviet forces, if necessary, in one blow, without sustaining intolerable losses on our side from a counterblow.

"Counterforce" has been made technically obsolete by the development by the Soviet Union of the same sort of "hard" missile locations and submarine carriers for missile launching as those developed by us. Under these circumstances, the "counterforce" concept reflected in the Administration budget has no military reality—quite apart from the political or human considerations involved in such schemes.

One may suggest a second military budget reflecting the goal of maintaining our present forces. This budget is based on the assumption that existing military forces include such enormous destructive capability that major additions to these forces serve no reasonable function.

Offensive capabilities have become so varied and deadly that there is no basis for assuming the feasibility of constructing reliable defensive systems against all possible

STRATEGIC NUCLEAR WEAPON SYSTEMS
Operational in 1963

United States Weapon System	Total Yield (megatons)	Yield per Vehicle (megatons)	Number of Delivery Vehicles
B 47 bombers	6,000	10	600
B 52 bombers	12,000	20	600
B 58 bombers	2,000	20	100
Atlas missiles	120	(1) est.	120
Titan 1 missiles	50	(1) "	50
Titan 2 missiles	30	(1) "	30
Minuteman missiles	500	(1) "	500
Skyhawk A-4D Navy aircraft	1,000	(1) "	1,000
Skywarrior A-3D Navy aircraft	150	(1) "	150
Polaris submarines (15 with 16 missiles each)	120	0.5	240
Totals	21,970	—	3,390

Note: Table does not include smaller planes, intermediate and short-range missiles, torpedoes, mines, cannon, tactical rocket launchers ("Davy Crockett").

Source: Congressional Record, Jan. 16, 1963, pp. 393-416, report of study by Institute of Strategic Studies, London.

Soviet Union (estimated) Weapon System	Total Yield (megatons)	Yield per Vehicle (megatons)	Number of Delivery Vehicles
Intercontinental missiles	1,875	25	75
Long-range bombers	4,000	20	200
Submarines (10-12 est. carrying 10 missiles each)	100-200	1	100-200
Medium-range missiles	3,500	5	700
Medium-range bombers	14,000	10	1,400
Super-intercontinental missiles	500	50	
Totals	23,975-24,075	—	2,395-2,495

This adds up to approximately 2,500 delivery vehicles carrying 24.0 billion tons of TNT equivalent, and breaks down to:

Long range: 435 delivery vehicles carrying 6.5 billion tons TNT equivalent.

Medium range: 2,100 delivery vehicles carrying 17.5 billion tons TNT equivalent.

Note: Medium range missiles and bombers are included in estimate of Soviet strategic weapons (though not in the U. S. estimate) because the shorter-range Soviet weapons could be directed to European cities and other areas adjacent to USSR.

Source: Congressional Record, Jan. 16, 1963, pp. 410-412. *New York Times,* January 19, 1961.

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THREE POSSIBLE NATIONAL DEFENSE BUDGETS FOR FISCAL 1964

Major Military Functions	Administration Budget	Maintenance-of-Present-Forces Budget	Finite-Deterrent Budget
		(In millions of dollars)	
Military personnel			
Present programs	$13,235	$13,235	$3,500
Pay increase	900	900	—
Operation and maintenance	11,792	11,792	4,200
Procurement	16,725	6,725	1,000
Research, development, tests	7,262	262	—
Military construction	1,232	—	—
Family housing	734	734	—
Civil defense	300	—	—
Military assistance	1,480	—	—
Atomic energy	2,893	893	500
Defense Related Activities			
Strategic materials stockpile	28	—	—
Selective Service	38	38	—
Emergency preparedness	—	—	—
Present programs	52	—	—
Proposed	30	—	—
Totals	$56,702	$34,056	$9,200

Source: Proposed Administration budget from *The Budget of the United States Government, Fiscal Year Ending June 30, 1964, U. S.* Government Printing Office, Washington, D. C., 1963, p. 61.

warhead delivery methods. *Defensive methods of every conceivable sort can be saturated and overwhelmed by the variety and quality of offensive weapons.*

On the offensive side, destructive capability, having already gone far beyond the overkill mark, calls for no further improvement on military grounds. *Addition to overkill is no gain.* The multiplication of overkill capability, although without military meaning, can be understood as one aspect of a technological race that is run for its own sake in the spirit of an international sporting event.

Present forces can be maintained with major reductions in procurement and military research.

The atomic energy item would be reduced by two-thirds under this alternative budget. Since the warhead stockpile of the U.S. is a multiple of the warheads that can be carried by all present delivery vehicles, it makes no sense at all to continue operating these plants and filling warehouses and caves with further nuclear warheads.

Another concept, that of the finite-deterrent, was described in 1960 by Jerome B. Wiesner, now scientific advisor to President Kennedy:

> Studies made independently by the U.S. Army and Navy have indicated that, even in the absence of [international] agreements limiting force size and permitting inspection, 200 relatively secure missiles would provide an adequate deterrent.

The finite-deterrent concept includes the maintenance of a limited but powerful system of delivery vehicles and warheads so emplaced as to be reasonably secure against attack. These would threaten an aggressor with destruction of his country as a predictable punishment for an act of aggression against the U.S.

The 940 strategic missiles in place in 1963 (land-based and submarine) are far in excess of the 200 units postulated by Dr. Wiesner.

Military spending has caused economic stagnation. Two-thirds of America's prime productive resources—her engineers and scientists—are now engaged in military rather than civilian production. The manufacture of military goods, however intricate, results in no further production. To illuminate this fact, one need only compare certain economic aspects of the U.S. and the Common Market:

MILITARY SPENDING, CAPITAL INVESTMENT—U.S. AND COMMON MARKET (1960)

	United States	*Common Market*
Military expenditures as % of GNP	9.2%	4.2%
Machinery and Equipment as % of GNP	5.4%	10.2%

Source: Statistical Abstract of the U.S., 1962.

These differences in industrial growth between countries of the European Common Market and the United States have their roots in the contrasting emphasis on activity in military and civilian production. Correction of these tendencies requires a shift in the use of money and technical manpower from military activities to the civilian economy.

In Germany, for example, 85 per cent—85 cents out of every research dollar—is private, and less than 15 per cent goes into military and space enterprises. Eighty-five cents thus goes into the civilian economy, so that today the German plants competing for world markets of civilian goods are being automated, modernized, and equipped in the latest and best fashion. There, new *products* are being developed, while we are emphasizing new *wrappings.*

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2. *Alternatives to Armaments*

By JOHN E. ULLMANN

REDUCTION of military spending to a maintenance-of-present-forces level would result in a budget cut of $22 billion. Since this represents a substantial amount of economic activity, it is important to suggest alternative markets and activities.

It should be noted that it would not be necessary to seek alternatives for the full amount if it were deemed fiscally advisable to convert some of the savings into a tax cut. For example, such a policy might permit sustaining the entire tax-cut program proposed by the Administration—$13.6 billion—without administrative and legislative countervailing moves that would partially neutralize it. In line with this kind of reasoning, the President's Labor Management Committee in the fall of 1962 recommended a $10 billion cut without concurrent reform.

Suggested alternative expenditures are as follows:

Item	*Cost* (Billions of dollars)
Education	5.5 – 9.5
Urban renewal	10.0 – 15.0
Conservation, soil renewal	4.0
Urban transit	.5
Public health	1.5
Net tax cut	10.0 – 13.6
Totals	31.5 – 44.1

The alternatives proposed could quite easily accommodate cuts of $22 billion that would be possible with a maintenance-of-present-forces budget. The programs suggested are based on activities likely to be of vital national importance in the future.

There is pent-up demand for a great number of rehabilitation and recreational projects that would require a wide variety of research and mechanical skills and a healthy boost in expenditures. Desalination of sea water, for which the Interior Department now has some pilot projects (the 1964 budget request is $12,000,000) is but one activity that would have national and international significance, and that could be funded from savings in the military budget.

Altogether, the reallocation of military expenditures as suggested here would permit considerable choice as to the method of organizing the investment of capital. The adoption of any of these alternatives would have a tonic effect on the economy and would allow us to proceed with long-deferred projects of rehabilitation and improvement.

3. *$22 Billion to Civilian Use*

By WILLIAM VICKREY

MANAGING the shift of $22 billion worth of resources from military to civilian use is no small assignment. There seems to be no valid military reason why this diversion should not take place with all possible prompt-

ILLUSTRATIONS OF HOW FIRST-YEAR MILITARY BUDGET REDUCTIONS OF $22 BILLIONS COULD BE USED EFFECTIVELY TO CREATE ECONOMIC OPPORTUNITY

A Range of Private-Public-Responsibility Budgets for Using $22 Billions of Reduction in 1964 Military Budget in Terms of Areas of Deficiency in U. S. Economy

(In Billions of Dollars)

Class of Activity	Primarily Private Productive Initiative	Mixed Private and Government Productive Initiative	Primarily Government Productive Initiative
U. S. Domestic			
Additional Private Expenditure*	15.0*	10.0*	4.0*
Education	1.5	2.0	4.0
Urban Renewal	1.6	3.0	4.0
Urban Transit	0.2	0.3	0.4
Public Health	0.3	0.7	1.0
Capital Investment in Human Resources (Poverty and Depressed Areas)	0.5	1.0	1.3
Water, Air, Soil and Other Resources Conservation	0.2	1.5	2.5
Subtotals	*19.3*	*18.5*	*17.2*
World-Wide			
Capital Investment in Human Resources	0.2	0.2	0.3
Bank for Economic Acceleration	2.0	2.0	2.0
Commodity Prices Support	—	0.1	0.2
Capital Repatriation	—	0.2	0.3
Loans and Grants	0.5	1.0	2.0
Subtotals	*2.7*	*3.5*	*4.8*
Totals	22.0	22.0	22.0

*If these additions to private expenditure are to be induced by a tax cut, the cut will have to be larger than the induced spending; how much larger being partly conjectural, to be determined on the basis of experience.

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ness. In addition, there are strong humanitarian and economic reasons for making these resources available for productive and life-enhancing purposes. The only delay justified is that needed to avoid gross inefficiency and excessive hardship resulting from unduly severe and sudden dislocations.

The essentials for a program designed to accomplish such a transition are adequacy and flexibility. One certainly cannot expect to produce a major change in the tempo of a $600 billion economy with minor tax adjustments of $2 billion or $3 billion a year, particularly if they are spread over several years in the future, any more than one could expect to steer the *Queen Mary* with a canoe paddle. A shift of $22 billion in resources out of the military and into other sectors, however, is beginning to get out of the paddle class. The way we handle an assignment of such magnitude is going to have substantial effects on the economy.

It is not necessary to rely primarily upon big government to absorb effectively the resources released by a massive military spending cutback. Adequate stimulation of consumer demand through tax reduction can also do the job if carried out to the required extent. The difficulty lies in rethinking the relationships involved so as to accept the budgetary consequences.

At the other extreme, the $22 billion could be picked up by an increase of about 6 per cent in personal consumption expenditures. But inducing personal consumption expenditures to expand by $22 billion—say, from a $350 billion level to a $372 billion level—would probably require tax cuts in the neighborhood of $25 to $30 billion. In such a case, there would be no reduction in the national debt. Rather, there would be an increased deficit. Yet this course is feasible, just as various intermediate programs between these extremes would be feasible.

Military resources can be transferred effectively to other purposes in a number of ways. Such a shift will require imaginative policies of appropriate magnitude that are free of mutually inconsistent goals. One may long for an economy with a low level of government expenditure, a balanced budget, a stable price level, and full employment, but with today's technology and current demands for individual security, simultaneous achievement of all four of these objectives is simply impossible. Full employment with a reduced level of government activity cannot be had without either an increased deficit or an imminent threat to price stability. Full employment with a balanced budget and stable prices would require a greatly increased level of government activity.

Investments and Dividends

HIGH RATES of illiteracy and a lack of trained people are major factors that retard economic development. We in the U.S. are in a unique position to invest some "seed money" in the form of relatively low-cost systems that would make possible rapid development of literacy and training in the basic mechanical arts.

Television transmission systems with transistorized receivers, powered by solar (or hand-generator-charged) batteries, can reach into the most remote village at about $150 per set or less. The cost of television is dramatically inexpensive when compared to the cost of training teachers (and training teachers to teach teachers). Breaking the literacy barrier in many countries means also breaking the barrier to accelerating economic development on a self-powered basis. Grant money ought to be concentrated on high-payoff operations of this sort.

In January 1962, Morris Forgash presented "A Plan for an International Bank for Economic Acceleration of Backward Countries" to the Atlantic Convention of NATO nations meeting in Paris. The essential idea of his plan is the use of a major banking operation relying primarily on private financing as an instrument for accelerating land reform and thereby economic development in Asia, Africa, and Latin America.

The plan for this bank was presented on the basis of an impressive analysis of agricultural productivity and land tenure systems, and the role that land reform can play as a catalyst in economic development.

One of the major difficulties in carrying out foreign land-redistribution measures—in Latin America, for example—lies in the unwillingness of the landowners to accept bonds in exchange for their excess land holdings. To give them cash, as they would like, is often impossible, because of the inflation that would result immediately, but payment in conventional long-term bonds smacks of outright expropriation because of the long experience with inflation.

Acceptance of payments in long-term bonds could be eased by attaching a purchasing power guarantee to the principal and the interest of the bonds—a guarantee that might be underwritten by the NATO countries. An institution like the International Bank for Economic Acceleration of Backward Countries would actually provide an incentive to accelerate land redistribution.

Undivided ownership of foreign agricultural, mining, and manufacturing enterprises by U.S. private interests turns out to be more and more of a liability to the U.S. and hamstrings its desire to establish friendly relations with the governments and peoples of emerging countries. Attempts to bring local domestic capital into joint ventures have not changed the picture to any substantial extent. Total direct investments by U.S. firms in the less developed areas amount to approximately $14 billion.

It is proposed that the U.S. Government announce a program of progressive local participation in control of these properties, making it possible for foreign governments or their citizens to take over up to one-half of these properties in a period of ten years—at an annual cost of $700 million. This would be a once-and-for-all operation. Thereafter, U.S. capital would be permitted to go overseas only if it does not amount to more than 49 per cent of any venture on an equity basis. On the other hand, investment of capital on such a minority basis should receive powerful tax and other incentives; the cost of such incentives to the treasury may well amount to $200 million to $300 million a year.

Strong support has lately been marshalled for federal insurance on U.S. private investments abroad. A well-conceived program of U.S. private investment that is coupled with scheduled increases in local participation and control could very well make a program for insuring assets unnecessary. —S.M.

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4. *Security and Instability*

By OTTO FEINSTEIN

IF WE are to understand the global significance of foreign aid, we must first be aware of certain relevant propositions:

►The underdeveloped countries are the major source of world instability, presenting threats to world security that are not amenable to military solution.

►Unless present trends are reversed, the economic gap between developed and underdeveloped countries will continue to widen.

►Foreign aid from the developed countries has been niggardly compared to the funds allocated for military efforts.

►There are means of using foreign aid that promise enduring benefits.

►Such expenditures address themselves to the key problems of world security.

►The U.S. has more to gain from such constructive efforts than from continuing to increase its military overkill capability.

Since 1945, there has been no military conquest of any important area that was not an outgrowth of World War II. All the troubles since 1945 have arisen from the imbalances resulting from the dissolution of previously underdeveloped empires, anticolonial disturbances in the underdeveloped areas, or revolts against military regimes in those areas.

Forty-seven countries have been "trouble spots" since 1945: Laos, Vietnam, Algeria, Argentina, Arabia, Bolivia, Brazil, Cyprus, Ghana, Rhodesia, British Guiana, Borneo, Malaya, Pakistan, Burma, China, the Congo, Colombia, Cuba, the Dominican Republic, Ecuador, Egypt, Greece, Guinea, Haiti, Honduras, Indonesia, Iran, Iraq, Jordan, Korea, Lebanon, Morocco, Nicaragua, Panama, Paraguay, Peru, the Philippines, Portugal, Angola, South Africa, Spain, Syria, Tunisia, Turkey, Venezuela, and Yemen.

Poverty and unrest in these underdeveloped areas are the major causes of world instability. (The Russian and Chinese revolutions can also be traced to problems of instability in underdeveloped countries under severe political strain.) The military problems that may have existed, or may now exist, arose out of the economic, political, and social problems of underdevelopment.

The overkill capability that has been developed with the world's annual $120 billion military budgets has not solved and cannot solve problems in underdeveloped countries. Few of the "trouble spots" may be said to have presented a basically military problem. In all these cases, the use of military force has been, at best, a temporary solution and often an irrelevant one. As a matter of fact, the massive use of capital, technology, and human skill for military purposes aggravates the problems of the underdeveloped areas by increasing the scarcity of these resources and thus raising their price.

That two-thirds of humanity live in wretched poverty has been the subject of much commentary in recent years. However, the basic and alarming feature of this problem has yet to be recognized: *the gap between the developed and the underdeveloped countries is increasing.*

Over the past eighteen years, while more than sixty underdeveloped nations have gained independence, national efforts and international cooperation in their development have so far failed to bring about the desired acceleration of economic growth. The average growth in per capita income over the past decade was less than 2 per cent and possibly as little as 1 per cent. The average level of real income per capita in the underdeveloped countries is now less than one-sixth—and in many cases less than one-tenth—that enjoyed in such countries as Belgium, Norway, and the United Kingdom.

Furthermore, food production per capita has actually been declining or rising only minutely in these areas. And while three-fifths of the human species live in these areas, they produce only one-third of the world's agricultural output. While the bulk of humanity is thus slipping into poverty, rather than emerging from it, the major industrial nations, as well as the underdeveloped ones, have been spending increasing sums on the military. Despite the obvious and inherent dangers in such a continued trend, the absolute gap between the rich and the poor countries has been widening.

U.S. aid has accounted for more than 75 per cent of all foreign aid. In proportion to U.S. productivity, however, our share of foreign economic aid has been small. If we take 1959, and ask what share of the national income of the developed nations went to the underdeveloped nations in the form of economic aid, we find that France led with 1.9 per cent and was followed by the U.S. with .7 per cent, the United Kingdom with .5 per cent, and West Germany with .3 per cent. If the United States, the United Kingdom, and West Germany had given the same percentage of their national income as France, foreign aid for 1959 would have been $10.7 billion rather than the $4 billion that

The Declining Dollar

THE CLAIM is made that the enormous annual expenditure on armaments and the military establishment in this country is vitally essential to the maintenance of America's world position. It is nearer the truth to say that without a shot being fired, without United States armies once engaging the enemy, her world position is being frittered away, irretrievably, by America's tacit repudiation of the basic value of her currency.

It is true that gold is still exchanged for dollars and dollars for gold at $35 per ounce. But the ability to continue such exchanges grows less and less as the months pass. The accumulation of foreign short-term claims upon U.S. gold reserves, despite the willingness of foreign central banks to help alleviate temporary difficulties, will undermine the use of the dollar as the banking currency of the world. This is precisely how sterling was undermined as a world currency in 1931.

However she may try to escape this trap of her own making, America cannot remedy the situation until government expenditures are brought within reasonable bounds. And this cannot be done so long as almost 10 per cent of the Gross National Product is allocated to military expenditures financed by debt.

From 1950 to 1963 the gold reserve of the United States declined from $24 billion to $15 billion. This occurred despite sustained favorable trade balances. The controlling factor has not been U.S. capital investment abroad or foreign economic aid. The military spending abroad of $2-3 billion per year changed the favorable balance of trade into an unfavorable balance of payments. There are now $19 billion in claims held abroad against $15 billion of U.S. gold reserve. This tendency jeopardizes the international and domestic value of the dollar, the wide use of the dollar as a store of value, and the banking and allied business of the U.S.

—TERENCE MCCARTHY.

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it actually was. Even such a sum would have been considerably less than 10 per cent of the military budgets of those nations for that year.

Four estimates have been made as to the total amount of foreign capital required by the underdeveloped areas, over and above their domestic resources devoted to investment. These estimates range from $6 billion to $10 billion annually.

After allowing for the present flow of foreign capital, there is a current deficiency of between $3 billion and $6 billion a year if the modest annual rate of growth of 2 per cent in per capita income is to be achieved. Even this would be only a minimal program. In essence, the real answer to the massive problems of the underdeveloped areas is to increase the productivity of their labor, natural resources, and capital.

Economic theory now indicates that investment in human capital is the key to economic development, and that productivity and capital formation are secondary results. Thus, the most effective investment of foreign aid would be in education—primary, secondary, vocational, and technical.

A number of advantages would flow from educational aid. Teachers and intellectuals could obtain constructive employment; the influence of ideologies of violence would be reduced; and a middle class would be either created or enlarged. Furthermore, most of the people would be given something concrete: advancement for their children and the possibility of their own advancement. The funds spent for education would aid in the development of an effective consumer market even as they stimulated labor productivity and trimmed production costs.

Nor would this have to be a permanent handout. The program can be instituted in such a way that our share declines over the years. Popular pressure would be the factor guaranteeing continual education outlays by the local government, particularly as more people are educated, more schools built, and more teachers trained.

Finally, such a program supports social and population stability, educates people in the use of parliamentary tools of progress, increases the number of people willing to limit the size of their families, makes the laborer more productive, and creates markets for domestic and foreign entrepreneurs.

It is fortunate that the solution of the problems of underdevelopment would help resolve some of our internal problems, such as unemployment and in insufficient rate of economic growth.

A program of foreign aid in the form of bank credits, grants for massive educational efforts, and accelerated foreign trade will lead to economic progress, political stability, and social development in the underdeveloped areas. Such conditions would inevitably encourage the flow of private foreign investments and might even lead to the rebirth of long-term portfolio investments.

If such changes are not made, or if only half-hearted measures are taken, then social unrest, increasing instability, and guerilla wars are extremely likely to plague us within a very short time.

5. *Latin America and Military Aid*

By EDWIN LIEUWEN

DESPITE more than a decade of United States military assistance to Latin American nations, the military power and war-making potential of these nations to the south count for practically nothing. The Latin American armed forces have shown a marked unwillingness to combat collectively the Communist threat from either within or without the region itself. For instance, only Colombia responded to the U.S. call to arms in Korea. And there was as little concerted action in the Guatemalan

The Future: Can We Take the Initiative?

AMERICAN CHILDREN, recent studies show, are being made increasingly anxious by the Cold War. Between 25 and 50 per cent of our children in U.S. schools today expect nuclear attack. The young ones worry most about being poisoned by fallout, about being separated from their parents in a disaster, about the maiming or death of their families and themselves. Adolescents speak with some bitterness about the uncertainty of their future, about the possibility of their giving birth to deformed children, about the futility of working hard at school.

Until very recent times, America has been an outstandingly buoyant nation. We have imbued our children with optimism. We have brought them up believing that they would be able to cope with whatever life offered, and they have usually succeeded. Because we haven't restricted their vision with narrow traditions or cautions, they have been extraordinarily creative. We have given them a natural trust in people and a trust in their own ability to deal with people. As a result, they have impressed the world with their self-assured friendliness.

Up to a few years ago, America's influence in the world was always on the ascendant. Whatever we had set our minds to—whether it was expanding our exports, helping to win wars, developing the atomic bomb, rehabilitating Europe with the Marshall Plan—we accomplished. But in recent years, we've run into repeated conflicts with the Communists and we have had to be satisfied with stalemates. In certain psychological aspects, we have reacted neurotically to these setbacks. Instead of calmly pursuing the course that would serve our long-term aims, we have often seemed obsessed with fear of what the Communists would do to us.

To the degree that we adults become fearful and suspicious, we pass such attitudes on to our children. Specific studies have shown that when children are taught to fear others, it is always harmful to their personalities. Educated parents no longer try to control a youngster with threats of the bogeyman.

We will continue to undermine our children's confidence unless we can substitute positive aims for passive fears and suspicions. Children respond to a challenge even more readily than we adults. The poverty, hunger, disease, and injustice that have always plagued humanity—today as extreme as ever in many parts of the world—are no longer necessary. We in America have the scientific knowledge and the enormous industrial power to begin to change the face of the earth now, if we should choose to do so. Such a course would compel the Communist nations to follow our lead. Such a course would give our children not only courage but a deepening sense of inspiration and dedication.

—BENJAMIN SPOCK, M.D.

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crisis from 1950 to 1954 as there has been in the current Cuban crisis. Thus, in purely military terms, the concept of collective planning and defense would seem to have little or no practical application.

While it is true that the U.S. influence over Latin America's armed forces helps exclude Soviet influence there, it is questionable whether our security position is always thereby advanced. In countries where the military now dominates politics, such as Paraguay, Peru, Argentina, Nicaragua, and Guatemala, the primary opponent of the armed forces is internal civilian opposition rather than world-wide Communism.

Latin America's armed forces have frequently employed the equipment sold or granted by the U.S. to overwhelm civilian political organizations.

IN Brazil, for example, following the receipt of nearly $300 million in Lend-Lease equipment and the dispatch of a token expeditionary force to Italy during World War II, the armed forces assumed the right to depose President Vargas when the war was over. According to Laurence Duggan, the United States equipment and experience in European fighting built up the role of the officer corps in Brazilian politics; thenceforth it began making and breaking governments. Again in 1954, following receipt of more military aid and the assumption of a new defense-of-the-hemisphere role with the signing of the 1953 MDA Pact, the military arrogated to itself the right to depose Vargas again, although this time he had been freely elected to the presidency.

In Colombia, prior to the military coup of 1953, the army had been receiving both grants and reimbursable aid from the United States. The officer corps, its confidence bolstered both by its fighting role in the Korean War and by its assumption of the task of "preserving order" during the civil war, could not resist the temptation to seize power. United States military aid must certainly be considered as a contributing factor that helped to tip this balance, bringing the Colombian army back into politics after a half-century of civilian rule.

"The strengthening of the armed forces, for defense or for preserving internal order, seems only to give encouragement to the Latin American officer corps to convert themselves into even more highly political instruments than they are already. The intentions of the donor are, as in the past, perverted by the recipients.

Recently, Senator Ernest Gruening (Democrat of Alaska) reported:

"A military coup overthrew the existing government of Peru last July even as the Presidential election ballots were being counted. Army officers invaded the Pizarro Palace, seized and imprisoned President Manuel Prado, and established themselves in power.

"The tank which crashed through the palace gates was a Sherman tank made in the United States and supplied by us to Peru as a part of our military-aid program. The officer who carried out the capture of the palace, Colonel Gongalo Briceño, was trained at Fort Benning, Georgia. Others of the junta and of its military cabinet likewise received their training in the United States. Several had been only recently awarded the U.S. Legion of Merit; in their citations, services to the 'objectives of democracy' were stressed."

Does military assistance thwart the progress of democracy in Latin America? Insofar as military aid programs have increased the political influence of the armed forces, the prospects for democracy appear to have suffered. The military tends to resort to non-democratic procedures to achieve internal order and stability, which both the local military and the U.S., for different reasons, ardently desire. The 1962 military takeovers from freely elected civilian governments in Argentina and Peru are cases that clearly demonstrate this fact.

DOES the political advantage of gaining the cooperation of Latin America's armed forces with military assistance outweigh the disadvantage of alienating democratic civilian elements by the continuance of such aid? It matters little whether the U.S. arms are really the determining factor in provoking military intervention in internal politics. The point is that most civilian elements in Latin America believe this to be true.

It should be borne in mind that U.S. military assistance to Latin America is supported only by that area's military forces, which comprise less than 5 per cent of its population. Most civilian forces are opposed to these programs, fearing their own armed forces far more than they do the Russians.

Conclusions expressed by this writer three years ago still hold true: "For the great majority of Latin Americans, who see no great danger of aggression from outside, the U.S. military program compounds their internal problems, interferes with the process of social change, and hinders progress in economic development. The reimbursable aid program, the evils of which are magnified by the new credit policies, gives license to the armed forces to squander money on flashy military 'toys' . . . . The provision of U.S. arms to military regimes often stymies the popular urge to political freedom.

The Underdeveloped Market

THE TASK of eliminating poverty in our society has languished for the past decade while we have devoted ever greater resources to the military effort. A redirection of our economy would allow us to correct these imbalances.

With nearly 10,500,000 families and almost 4,000,000 individuals living in poverty in 1960, the total comes to approximately 38,000,000 Americans—more than one American in every five.

The total of those with annual incomes of less than half the amount required to place them above the poverty level, involving in 1960 nearly 3,300,000 families and almost 2,000,000 individuals, comes to 12,500,000 Americans—about one in every fourteen.

The number of Americans living in poverty was reduced very rapidly from the depression level reached in 1935-36 to about 38,000,000 in 1960. The number with less than half the income required to lift them above the poverty level was reduced to about 13,000,000 by 1953, but there had been no further reduction by 1960.

These 38,000,000 Americans living in poverty are virtually no market for either soft or durable consumer goods. Their purchasing power is restricted to the barest requirements for subsistence. The marketing implication is that about 20 per cent of the American domestic market remains to be developed by improving the productivity of 38,000,000 Americans, and thereby boosting their purchasing power.

—JOHN E. ULLMANN.

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A Declaration of Interdependence

ROME

A PERSONAL drama of historic proportions is being enacted in Rome, where Pope John XXIII is attempting to use his remaining energies and the resources available to him in an effort to halt the terrible drift toward a nuclear holocaust. He has not been well; but so long as he can think and act he is determined to awaken the world's peoples and their leaders to the peril of policies that have brought the human race to the present situation of terror.

Step by step in the past four years he has attempted to make his papacy and the Roman Catholic Church in general completely relevant to the human situation. In this sense, he seems to believe that nothing could be less relevant than a church preoccupied solely with religious matters. Theology must not be narrowly defined. It must not be allowed to become a reflection of the irrelevancies that are so characteristic of the behavior of men and institutions in this modern world.

This was behind Pope John's moral intervention during the week of the Cuban crisis. And it was behind his decision from the start not to denounce or fulminate against hostile ideologies but to develop instead the constructive contacts and opportunities that would enable his voice to be heard where it would have to be heard if the present folly were to be arrested. Accordingly, he has welcomed the chance to discuss questions relating to the peace with representatives of all nations that are necessarily involved in the maintenance of peace.

It is ludicrous to say that Pope John, because he has refrained from denouncing Communism and because he has met with a member of Mr. Khrushchev's family, has no understanding of the nature of Communism or its aggressive intentions. The Pope has a most meticulous knowledge of the mainsprings and dynamics of Communism. But he is equally knowledgeable about the circumstances that can lead to change in the world. And he has a profound respect for the power of ideas in a situation in which old ways of thought and actions no longer speak to people's needs or hopes.

Far from being remote or detached from the hard realities of the present world struggle, the Pope knows where these realities are pointing. Men must make distinctions between old realities that lead to a dead end, and new realities that can lead to a creative and safe existence for the human community. In this sense, his historic encyclical letter, "Peace on Earth" (see page 20), is in the nature of a declaration of interdependence for the human species. It holds up a bold new vision and dramatizes the higher reality of attainable new goals. It makes it clear that beyond the stress and clamor of nationalities there must be created a viable new form of world organization with authority to regulate the dealings among nations under justice and law. And he sees the United Nations as the organization which, properly strengthened, must become the framework for such a world community. This is genuine realism, for anything less is unworkable and dangerous.

In its analysis of the condition of man; in its assertion of freedom of conscience in religious and political matters; in its discussion of the dangers of a runaway nuclear arms race; in its comprehension of the nature of nuclear war; in its call for a strengthened United Nations under law and responsive to the needs of the world human community—in all these respects, the encyclical letter has historic proportions. It is at once eloquent and practical, diagnostic and therapeutic, historical and contemporary. Most important of all, it sets men's minds in a new direction, enabling them to break loose from notions of inevitability, defeatism, and despair.

BEHIND the encyclical is the conviction that the present crisis is not purely political; it is profoundly spiritual in nature and effect. For the Pope recognizes that nuclear war, if it comes, will be a war not just of nation against nation but of man against God. The vital balances of nature that make life possible; the continuity of the human genetic strain; the capacity of man to respond as a human creature—all these are severely affected by nuclear war.

This is not all. Pope John does not believe that religion should be completely theoretical. He cannot imagine Jesus, or any of the world's great religious leaders, declaring that hydrogen bombs or germ warfare weapons must be manufactured, stockpiled, and used in the national interest. He places the human interest above the national interest. Nor can he justify a policy in which nations pump large quantities of radioactive poisons into the atmosphere, jeopardizing the health and violating the rights of peoples who are in no way involved in these disputes.

In short, Pope John believes in applied Christianity. He would like to see the pillars of the Church become the solid supports of a genuine structure for peace. He cannote separate the ethics of Christianity from the crisis involving the human family. And he believes that all other religions are similarly involved. And that is why the encyclical is not addressed to Catholics alone but to all men of good will.

In sum, the moral and spiritual nature of the problem cannot be dis-

Photo by N. C. (Retina III.).

The Colonnade at St. Peter's—"Pope John would like to see the pillars of the Church become the solid supports of a genuine structure for peace."

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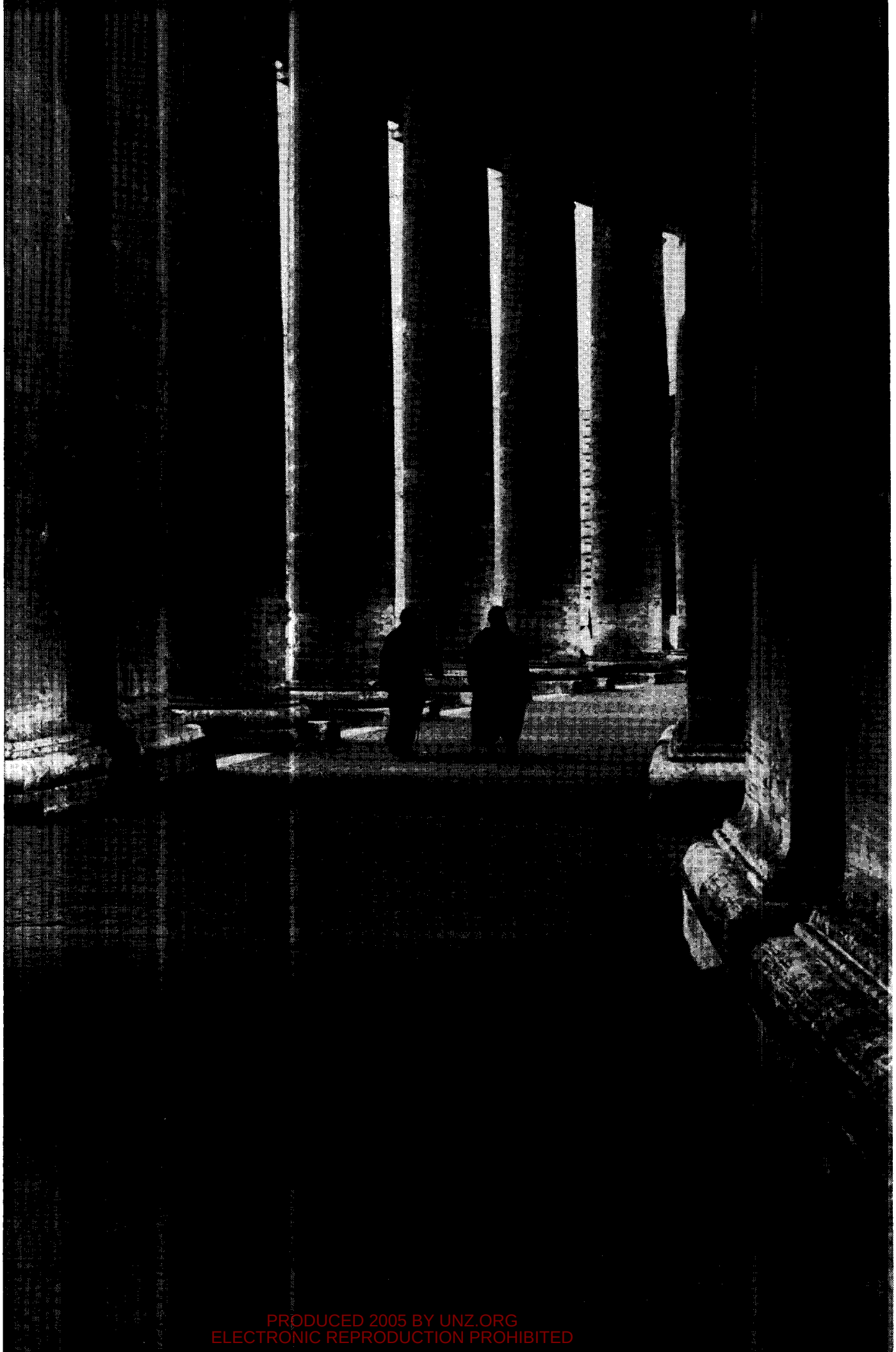

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guised or obscured by noisy and petty pronouncements having to do with national stance or posture.

Have the ideas in "Peace on Earth" penetrated through to Communist countries? This is the vital test of the Pope's conviction that persuasion is a far more effective instrument than denunciation. So far, the approach has been notably successful. The encyclical has been given prominent attention in the press and on radio and television inside the Soviet Union. It is of at least equal significance that Archbishop Slipoy, of the Greek Rite Catholic Church in the Ukraine, has been released from his long imprisonment and is now in residence in the Vatican.

In *Mont Saint-Michel and Chartres*, Henry Adams wrote that "Under any conceivable system the process of getting God and man under the same roof —of bringing two independent energies under the same control" has been an extraordinarily difficult and painful process. It is possible that Pope John has this kind of architecture in mind—not simply for adherents of any particular creed but for the generality of men.

It is usually presumptuous and always difficult to predict the historical significance of any event. Be that as it may, the central idea in "Peace on Earth"—the need for a human community under law—is the dominant imperative of twentieth-century man. This is the way to relevance. The individual who feels a terrible sense of detachment from living history can rid himself of his personal oppression. He can turn his thoughts to essential new goals. And energies follow thought. —N.C.

Excerpts from the Encyclical Letter of Pope John XXIII

Interdependence Between Political Communities

RECENT PROGRESS of science and technology has profoundly affected human beings and influenced men to work together and live as one family. . . . The social progress, order, security and peace of each country are necessarily connected with the social progress, order, security and peace of all other countries.

At the present day no political Community is able to pursue its own interests and develop itself in isolation, because the degree of its prosperity and development is a reflection and a component part of the degree of prosperity and development of all the other political Communities.

Insufficiency of Modern States To Ensure the Universal Common Good

THE UNITY of the human family has always existed, because its members were human beings all equal by virtue of their natural dignity. Hence there will always exist the objective need to promote, in sufficient measure, the *universal* common good, that is, the common good of the entire human family.

As a result of the far-reaching changes which have taken place in the relations between the human family, the universal common good gives rise to problems which are complex, very grave and extremely urgent, especially as regards security and world peace. On the other hand, the public authorities of the individual political Communities—placed as they are on a footing of equality one with the other—no matter how much they multiply their meetings or sharpen their wits in efforts to draw up new juridical instruments, they are no longer capable of facing the task of finding an adequate solution to the problems mentioned above. And this is not due to a lack of good-will or of a spirit of enterprise, but because of a structural defect which hinders them.

It can be said, therefore, that at this historical moment the present system of organization and the way its principle of authority operates on a world basis no longer correspond to the objective requirements of the universal common good.

Connection Between the Common Good And Political Authority

THERE EXISTS an intrinsic connection between the common good on the one hand and the structure and function of public authority on the other. The moral order, which needs public authority in order to promote the common good in human society, requires also that the authority be effective in attaining that end. This demands that the organs through which the authority is formed, becomes operative and pursues its ends, must be composed and act in such a manner as to be capable of bringing to realization the new meaning which the common good is taking on in the historical evolution of the human family.

Today the universal common good poses problems of world-wide dimensions, which cannot be adequately tackled or solved except by the efforts of public authorities endowed with a wideness of powers, structure and means of the same proportions: that is, of public authorities which are in a position to operate in an effective manner on a world-wide basis. The moral order itself, therefore, demands that such a form of public authority be established.

The Universal Common Good and Personal Rights

LIKE THE COMMON GOOD of individual political Communities, so too the universal common good cannot be determined except by having regard to the human person. Therefore, the public authority of the world Community, too, must have as its fundamental objective the recognition, respect, safeguarding and promotion of the rights of the human person.

The Principle of Subsidiarity

THE PUBLIC AUTHORITY of the world Community is not intended to limit the sphere of action of the public authority of the individual political Community, much less to take its place. On the contrary, its purpose is to create, on a world basis, an environment in which the public authorities of each political Community, its citizens and intermediate associations, can carry out their tasks, fulfil their duties and exercise their rights with greater security.

Modern Developments

AN ACT OF THE highest importance performed by the United Nations Organization was the Universal Declaration of Human Rights, approved in the General Assembly of December 10, 1948. In the preamble of that Declaration, the recognition and respect of those rights and respective liberties is proclaimed as an ideal to be pursued by all peoples and all countries. Some objections and reservations were raised regarding certain points in the Declaration. There is no doubt however, that the document represents an important step on the path towards the juridical-political organization of the world Community. For in it, in most solemn form, the dignity of a person is acknowledged to all human beings; and as a consequence there is proclaimed, as a fundamental right, the right of free movement in search for truth and in the attainment of moral good and of justice, and also the right to a dignified life, while other rights connected with those mentioned are likewise proclaimed.

It is our earnest wish that the United Nations Organization—in its structure and in its means—may become ever more equal to the magnitude and nobility of its tasks, and that the day may come when every human being will find therein an effective safeguard for the rights which derive directly from his dignity as a person, and which are therefore universal, inviolable and inalienable rights. This is all the more to be hoped for since all human beings, as they take an ever more active part in the public life of their own political Communities, are showing an increasing interest in the affairs of all peoples, and are becoming more consciously aware that they are living members of a world Community.

April 11, 1963

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LETTERS TO THE EDITOR

SOLUTIONS AND SOURCES

THANK YOU FOR publishing John F. Wharton's "Speculations During a White Night" [*SR*, Apr. 6]. The article is stimulating as well as refreshing. Mr. Wharton is in the "prophetic line" when he maintains that a spiritual revolution surpassing the atomic one is not only possible, but is the logical precondition for the establishment of an enduring peace.

Articles like this . . . are most helpful in that they provide perspective on the issues involved in today's world and point the direction man must take.

(The Rev.) ROY SCHAFFER,
Archdeacon,
Episcopal Diocese of Erie.
Erie, Pa.

JOHN F. WHARTON asks: "Is it any wonder that people become morally and spiritually benumbed" as a result of the "physical sex, violence, crime, and psychopathic problems" with which the New Wave movies are obsessed? Yes, it *is* a wonder, for . . . these films that Mr. Wharton finds so morbid only reflect the already present numbness that results from such overwhelming situations as the one he describes; the pictures are hardly a cause.

What Mr. Wharton has failed to grasp is that "the men who produce these morbidities" are vitally concerned, aware intellectuals like himself, who have sought to portray graphically the situation so many people refuse to see. It is a mistake to lump together "the violence of television programs" that reflect only the true mediocrity of American taste with the freshness or violence of a novel that deplores such mediocrity. I am not, unfortunately, speaking for all New Wave films or all contemporary novels, but only for those that sincerely and consciously try to give witness to the many slum areas in the modern human predicament.

R. GORDON LUTZ.
Appleton, Wis.

THE FAILURE FALLACY

IN WRITING THAT "our free institutions are not nourished by information programs [on television], which simply are never watched except by a comparative handful of our citizens" [*SR*, Apr. 6], Robert Lewis Shayon falls for the same kind of fallacious reasoning as broadcasters and advertisers who think their programs are failures when they reach only a few million people.

That "comparative handful" Mr. Shayon dismisses so handily may well number about twenty-five times as many people as read his column or anything else in *SR*, or, for that matter, in many of our important and influential organs of ideas and opinions. Throughout history it has been smaller "handfuls" than this who have helped advance our free institutions.

Why disparage such programs as *CBS Reports* as valueless merely because five or six times as many people prefer to watch *Wagon Train*? In your own magazine field, the differences in choice can be far more striking than this. This might lead one to conclude, following Mr. Shayon's kind of logic, that *SR* does nothing to "nourish our free institutions." But that is hardly the case, is it?

ROBERT M. POCKRASS.
University Park, Pa.

THROUGH HISTORY WITH J. WESLEY SMITH

"This is a lovely letter, Mr. Smith, but we would prefer to have the testimonial come from your wife."

WHAT SCIENCE ISN'T

RABBI ROLAND B. GITTELSOHN, in "Where Religion and Science Meet" [*SR*, Mar. 23], is, of course, entitled to his own opinions of what religion and science mean. There is probably little need to point out that his religion of naturalistic, humanistic theism" bears no resemblance to Judaism as it has been handed down through the ages. The God whose Unity has been proclaimed by Jews across the centuries is not a vague "principle and power of purposive development." He is the Creator and omnipotent Master of the universe.

As a scientist, I consider it of greater importance to emphasize that Dr. Gittelsohn's unsophisticated ideas of science show almost as little resemblance to the science in which my professional colleagues and I are daily involved. Science represents the most powerful tool yet devised by the intellect for exploring the characteristics of the physical world around us. It is that power that has fascinated and drawn those of us who make . . . science our life work. But no field of science ever pretends that its statements at any given time necessarily represent "truth" or "reality," or says what the world "really" is or was.

Science does not require our belief in any of its statements beyond those that report direct sense perceptions; much less can it command our disbelief on matters outside its stated field. In this sense, science is indeed irrelevant to religion, although religion, of course, need not be irrelevant to the scientist. Dr. Gittelsohn might find it profitable to inquire further into the nature of scientific investigations as revealed by philosophical analysis in this century, especially in the works of historians of science.

HERBERT GOLDSTEIN,
President, Association of
Orthodox Jewish Scientists.
New York, N.Y.

GOING TO THE DOGMATISMS

WHAT PROOF HAS John Ciardi offered to show that Dr. Max Rafferty and the anonymous lawyer are wrong [MANNER OF SPEAKING, Apr. 13]? Even to ask the question, of course, is to invite a repetition of Ciardi's tirade against the "rage to be sure." Yet there is a difference, and the new charge would be unwarranted.

After all, it was Ciardi who set out to disprove the assertions of Rafferty. But what do we get? Countercharges! "Mindlessness," "ignorance," "jingoism," "deadness," and—who would have thought it?—"wrongness." Three columns of this kind of answer, much of it unworthy of an intellectual.

And then the . . . airy dismissal of the controversy! "Let me assume . . . that the specific issue has been put aside." This is a new and hitherto unvalidated procedure in controversy. If a challenger picks up the cudgel, it hardly behooves him to lay it down unless he has provided . . . real evidence. To quote Montaigne and Spinoza is hardly to score a point, when these gentlemen, too, are merely making assertions of whose rightness they are "sure."

OLIVER C. RUPPRECHT,
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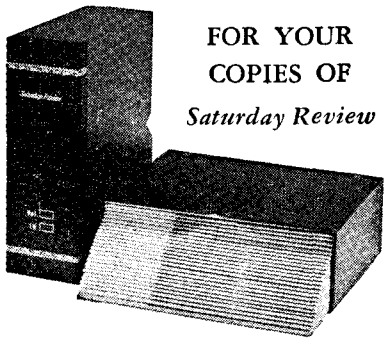

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The *Auteur* Theory

CURRENTLY stirring in the teacups of our more recondite film critics is a theory, imported from France and snapped up by the *avant-garde,* that the true author of a film is its director, and that the business of criticism is to relate new efforts to the *corpus* of his work. No earth-shattering premise, to be sure; but, as Pauline Kael perceptively and spiritedly points out in the current *Film Quarterly,* its eager young champions have reduced it not only to an absurdity but to a shambles.

The absurdity, particularly when the *auteur* theory is applied to American productions, stems from a wilful blindness to the power play and compromise behind every film ever turned out. Credits, we have long since learned, often conceal as much as they reveal about who really makes a picture. The shambles comes from an arbitrary selection of directors who, once chosen, can *ipso facto* do no wrong. In all seriousness, the leading *auteur* spokesman in this country, Andrew Sarris, has written, "Am I implying that the weakest [John] Ford is superior to the strongest [Henry] King? Yes!"

Sarris and his confreres are "committed" critics—committed to finding things to praise in the shabbiest films directed by their gods, committed to decrying even the virtues of films by directors who are not "in." "It [is] difficult to think of a bad director making a good film and almost impossible to think of a good director making a bad one," posits Ian Cameron, an English apostle of the *auteur* theory.

What is sad and significant about the American film is that its best directors—and by "best" I mean precisely what the *auteurs* mean: the talent for cinematic creation—are so often hobbled by the need to transmute shoddy merchandise into box-office gold. I can think of no director in Hollywood today more secure in his grasp of film techniques, with greater capacity to think cinematically, or more sincere in his desire to make good films than Delmer Daves. By all *auteur* lights, he should long since have made it to the pantheon, particularly since his earlier Westerns (*Broken Arrow, Jubal, 3:10 to Yuma*) are highly esteemed by the *Cahiers du Cinema* crowd that originated the theory. But somehow, in spite of everything, Daves remains beyond the pale, perhaps because too many of his pictures play Radio City Music Hall.

If an inverted snobbism is at work here, so is an inverted logic. According to the *auteur* theory, once a man has made several good films, he should automatically be recognized as a good director. Not so with our American *auteur*ities. The good gets interred with their bones. They just aren't "in."

Actually, Daves's pictures admirably illustrate precisely what is wrong with the *auteur* theory. A skilled screen writer, Daves has been called in many times to salvage studio properties that nobody else could "lick." And while he has no particular affection for either *Parrish* or *Susan Slade,* for example, he does derive professional satisfaction from the fact that he could make these films playable, salable, and profitable. A former actor himself, he has a knack for drawing creditable performances from the most unlikely studio-contracted talent. Troy Donahue, though hardly one of Daves's favorite stars, has never appeared to better advantage than in Daves's pictures. And because Daves is a lightning sketch artist, he can visualize scenes and camera placements long before he shoots, effecting important economies.

ALL of these skills, of course, remain operative from one picture to the next, be it *Pride of the Marines* or *Rome Adventure.* Daves is too solid a craftsman to toss off a film cynically. But, as is the case with most American directors, the content of his films varies widely; and it is content that proponents of the *auteur* theory choose to ignore.

Delmer Daves's latest picture, *Spencer's Mountain,* is filled with all the things he loves best in life—a sense of young people growing up in a world they cannot fully understand, his own frank enthusiasm for America the Beautiful (this time, the splendors of Grand Teton), and his constant enchantment with how things are done—rock quarrying, house building, starting a fire in an old-fashioned wood-burning stove. The film also reveals what I consider his greatest weakness, a Norman Rockwell overlay on Grant Wood originals. But Daves's concept of film authorship is apparently quite beyond the *auteur*ists, who persist in confounding screen technique with high art. Without it, the theory becomes merely a device for praising bad movies. —ARTHUR KNIGHT.

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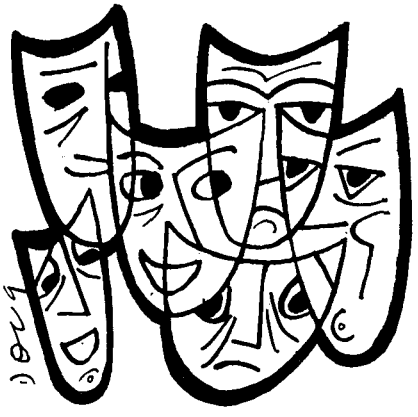
Maybe on Saturday

WHAT HAPPENS when a shy forty-two-year-old scoutmaster encounters a brassy prostitute in genteel, puritanical England? In Charles Dyer's *Rattle of a Simple Man* the meeting is probably much more wonderful and entertaining than it would be for real-life participants. In this unusual play, Mr. Dyer presents with inventive high humor the details of a Saturday-night tryst in a London basement flat. But he also suggests the gray backgrounds of workaday British existences against which this red lacquer event shines in wondrous contrast.

The remarkable thing about this extraordinary drama is that Mr. Dyer makes no attempt to evade the unpleasant detail inherent in the situation. The prostitute, Cyrenne, is neither more nor less cold-blooded and gaudy than hundreds of London "club girls." Nor is she sentimental as she enjoys mocking her embarrassed client. For it turns out that this is her client's first such experience, and he is so ashamed and fearful at the notion of impersonal sex that he tries to run away.

Why doesn't Cyrenne collect her fee and let him go? Is she amused at this absurd little man who finds ecstasy in washing her dishes? Does she enjoy his



gullible belief in her claim that she has an M.A. and is the daughter of a brigadier general?

Perhaps Cyrenne feels mysteriously compelled to make something of this little session that would fulfil the human need for festivity so bizarrely symbolized by the gaudy noisemaker from Percy's afternoon football match; an oversized red and white schoolboy scarf; a gaily colored medallion and ribbons.

As Percy tells Cyrenne, "Do you realize what tonight has been like for me? You're walking through Market Square at one o'clock in the morning, and suddenly finding a huge tent, say, that shouldn't be there. All blazing with lights and music. Then an exciting woman rushes up, grabs you by the hand, and hurtles you into the middle of it all. Three o'clock in the morning! And you thought there was nothing ahead but the eight o'clock bell at the factory."

But Cyrenne has confessions of her own to make. Near the end of the play she is forced to reveal her real lower-class background, and defends her lies by reminding Percy that the snobbish lower classes relish the idea of consorting with their betters. Angrily she rips off her false eyelashes, removes her makeup, puts on simple pajamas, and crawls into bed. Then, with appropriate simplicity, she asks Percy if he will be joining her. It is a marvelous piece of theatre.

As Cyrenne, Tammy Grimes does some of the best acting of her young career. While her personal sophistication occasionally suggests a girl less ordinary than the one Mr. Dyer intends, Miss Grimes's performance—in minimal lingerie—is so certain, so rightly self-centered that the play maintains an essential unsentimental course throughout. Precisely directed by Donald McWhinnie, her clowning—within the outlines of Cyrenne's character—is superb. Her inflection and tone as she says, "One of us has to make a move, love," and the image of her teaching poor client Percy to dance, are only two of many memorable and hilarious Tammyisms.

NO less impressive is Edward Woodward's Percy. Mr. Woodward gives us responses a lesser actor would turn into slapstick. He has an involvement and freshness that make the play's comic twists seem utterly uncontrived. His blushing "Oh, dear! Oh dear!" whenever he says something *he thinks* is naughty is classic. Even at play's end he remains so completely in character that we do not know whether or not he will risk the perils of festivity.

That we never find out if Percy does or does not, is entirely fitting. This comedy is not a case-history or a sex-teaser. It is a droll celebration of two humdrum people's pursuit of one Saturday night's antidote to the dutiful dreariness of Sunday mornings.

—HENRY HEWES.

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MUSIC TO MY EARS

A "Golden Age" of Ballet—Sutherland's Elvira

CONNOISSEURS of the phenomenon commonly called a golden age—whether in sculpture, jazz, poetry or, piano playing—come to realize after a time that what is uncommon about them is that they seem so common at the time they are happening. Given a subject blessed with an abundance of talent, served by a wide latitude of choice, and accompanied by the satisfying feeling that "this is the way things should be," you may be quite sure that here is a golden age that won't be recognized as such until long after.

Right now what conforms to that formulation—an abundance of talent, a wide latitude of choice, the feeling that "this is the way things should be"—is (and it may surprise some who take it for granted) ballet. How else can you describe a time in which the Royal Ballet returns to the Metropolitan Opera with its famously tasteful, unfailingly artistic performance of *Sleeping Beauty* (with another company left behind to perform in Covent Garden) and those otherwise disposed have the option of two performances on the same day by the New York City Ballet in the City Center?

With or without such concurrence, it seems to me that the Royal Ballet of and by itself is enjoying a golden period of its own just now. Not that radiant burst of dawn with which it came up in the same theatre, for Americans, in 1949, and nothing like a sunset glow. Rather, it is the pure, steady, dependable light of midday which, in a production such as *Sleeping Beauty,* embodies a warmth, sheds a shine like a bounty of nature itself. Very little about it is recognizably the same as in that first manifestation, but that "little" still looms large—the embodiment of Princess Aurora by Margot Fonteyn which appears (though we all know better) ageless, unchanged, indestructible.

TO contend that it is the same kind of marvel now that it was then (the year of *South Pacific* for those who want a ready reference in time) would be to flout reason and contradict the calendar. It is, indeed, even more marvelous in its suggestion of youthful exuberance and girlish charm for the plain fact that it relates increasingly to artistry and less to chronology. In the "Rose" adagio, for example, there was a time when magnetism attached to the challenge of a technical problem—would she or wouldn't she? For the indoctrinated, there remains no such doubt now: she will, of course. But Fonteyn has learned how to play upon the marginal doubt in the mind of her viewers so skilfully that they react with no less a sense of triumph, when *this time* she has done it superbly.

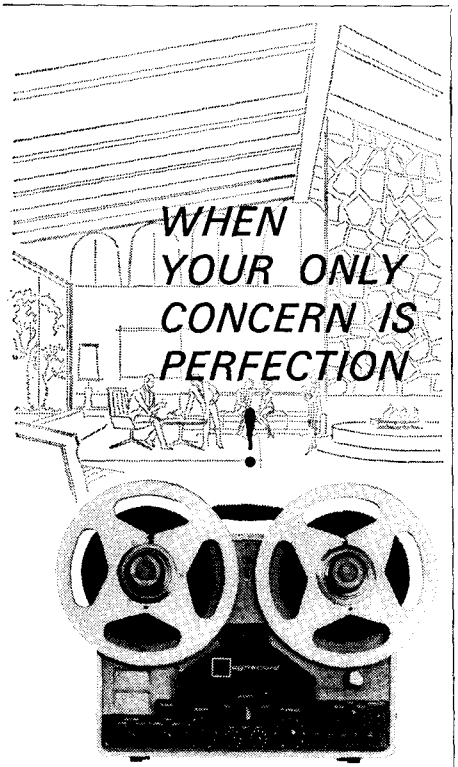
There should be a credit, too, for Leslie Edwards, as fine a courtly master of ceremonies now as then, and a toast in memory for Michael Somes, whose days as Prince Florimund are behind him. In the latter's place is the now matured David Blair, who not only bears himself well but also bears with grace the burden of partnering Miss Fonteyn. Some edges of the ensemble were a little ragged in the opening performance, but not those related to the attractive Lilac Fairy of Deane Bergsma, or her companions in fairyland. I still can't see anyone but Frederick (now Sir Frederick) Ashton as Carabosse; as yet Alexander Grant is only wearing the costume and makeup, not feeling that joyous venom in breaking up the christening that Ashton conveyed so well. For breadth and clarity of detail, John Lanchberry's conducting made more of Tchaikovsky's score than has been heard since the Constant Lambert season, with a particular credit for Louis Gabowitz's playing of the violin solo passages.

FOR those to whom the agility and ease of Joan Sutherland's singing are self-justifying, the final performance of the American Opera Society's Carnegie Hall season was something like Emerson's view of beauty—its own excuse for being. For those who came with a curiosity about Bellini's *I Puritani* it was decidedly otherwise: a mélange of individual efforts lacking unity of purpose or strong musical outline under the rigidly uncertain direction of Richard Bonynge, whose presence was more related to the influence of his wife (Miss Sutherland) than to any other single factor.

For my taste in Bellini, the music of *Puritani* is inferior to either *Norma* or *La Sonnambula,* lacking the superb melodic flow of the former and the frequently exalted expressiveness of the latter. It provides a wide-ranging opportunity for Miss Sutherland to demonstrate her ever-amazing virtuosity, this time with a heavier sound in the low and middle range to emphasize even more strongly the brilliant sparkle at the top. But it did not strike my ear that Miss Sutherland was conveying much of the volatile emotion of Elvira, who loses her reason under the stress of one unexpected happening and regains it under another.

As in their recent performances of *Sonnambula* together, Nicolai Gedda exceeded the call of duty in getting out most of the high-lying notes that Bellini wrote for the extraordinary voice of Rubini, without in the least suggesting that this was ordinary for him. One could almost hear him setting his cords, two or three notes before, to produce the next C sharp or D. This comes in the category of valor rather than artistry, for the sound in these circumstances is pinched and unpleasant. On the whole, the most beautiful sound from the male singers came from the voice of the recent Metropolitan Auditions winner, Justino Diaz as Sir

(*Continued on page* 53)



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BOOKED FOR TRAVEL

Big Scoop

MY DUSTY recollections of Panama, which I had garnered during a fleeting overnight stay en route to South America some years ago, were, as I sifted through them recently, somewhat less than savory. They included a tropical if undistinguished hotel, some ghastly nightclubs in the city, and the canal, a business-like operation that had no truck and no time for gawpers. I recall registering little disappointment when the plane moved on toward Lima, Antofagasta, and points south. Thus ended my short course in elementary canal.

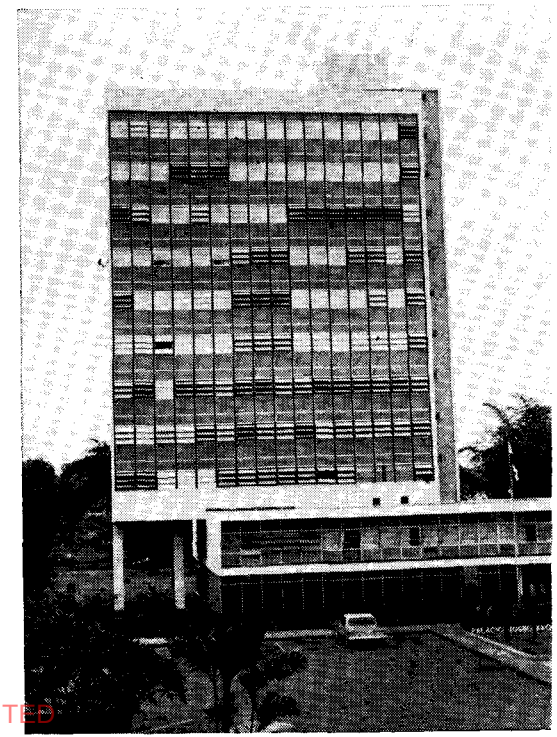
All that had changed, I was earnestly assured one day last fall, by an emissary from Panama, a handsome one at that, named Irma Arango, a lady who had only recently been appointed tourist commissioner of the republic and the only woman in the world to hold such a position. Finding myself in Santo Domingo the other Sunday morning, it was only a matter of a few hours down to the Isthmus, and I decided to take the southbound Pan American air bus which flea-hops through Latin stops several times a week. After I was piped aboard the aircraft by a raffish Dominican combo in red and white shirts who play the timba, the guira, and other instruments essential to Latin rhythms, the plane jumped to Curaçao, pausing only long enough on that island for the passengers to buy a duty-free watch at the airport branch of Spritzer and Fuhrmann's. We landed at Tocumen Airport at the same time as an Avianca plane zoomed in from Barranquilla, a conflict that threw the inspectors from the health department into a minor frenzy. Passengers on our plane were relegated to a hot and airless room for what I took to be a considerable period, until at long last an official in sports shoes, sports shirt, and slacks, smoking a cigarette at that, sauntered into our pen and began examining our vaccination records. It was a poor show, I thought, for a nation on whose soil men had successfully conquered yellow jack, malaria, and the disastrous dysentery that plagued the canal diggers.

If the signs of progress had not yet reached the suburbs where the airport is located, they were clearly evident in Panama City, toward which I was shortly rolling at a frolicksome clip. The city that awaited me bore very little relation to those sordid memories I had been storing all these years. The Hotel Continental, where I stayed, had opened only a few weeks before, but its staff had clearly been well briefed on the proper function of reception clerks and bellhops. I was shortly installed in a modest, attractive chamber in the sky, air-cooled, spare, and attractive. I stepped out onto the terrace and looked down to the pool whose terrazzo apron was decorated by dawdlers frittering away the waning sunlit hours of a quiet Sunday afternoon. The neighborhood apartment houses and office buildings rose in the background, canyon walls of glass and whitewash that looked like Casablanca or Nice. Only next door did I see any evidence of old Spain, a hacienda curlecued with bits of iron, its roof iced with terra cotta tiles, a pocket of yesterday that had been overrun in the rapid advance of the new clean-line architecture.

In the accepted manner of new hotels, the Continental sported a string of shops, but its coffee shop and drug store had added some improvements over the American prototypes upon which they had been patterned. For one thing, both are open twenty-four hours a day. For another, the drugstore —bless their tender hearts—cheerfully weighs your mail and sells you stamps without benefit of those despicable machines that plague the United States. Sometimes it's downright simple to be civilized. Nightclubs and restaurants are scattered in the mezzanine, and at the end of the hall a casino offers roulette, twenty-one, and a dice table patronized by Yanquis whose explosive supplications to the cubes resound across the room with all the gracious taste of the tables of Las Vegas.

I had lunch the next day at the Hilton, which sits on a hilltop across the street, and found the dining room had been transformed into a svelte continental salon with elaborate menus and a Swiss captain whose English was nearly as good as that of the Panamanian table waiter. Somewhat less continental is the organ in the bar, all of whose works, painted in

The new Panama—swimming pool at the Hotel Continental, left; the new Palace of Justice, right.



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colors that glow in the dark, are on display behind plate glass windows. The Hilton's immediate advantages lie in the gardens that surround its soaring honeycomb of rooms. Somewhere in the underbrush is a huge pool where wives of businessmen, and children, too, while away the hours until Daddy comes home. A miniature golf course is a time killer, and the two tennis courts, equipped with floodlights, get a lively play from the American colony in the cool of evening.

Although these new towering, glass, chrome, air-cooled, and swimming-pooled hotels have brought to the suburbs of Panama City the distinct look of suburban San Juan, I was pleased to discover, after more penetrating explorations into the city, that all of the capital had not succumbed to stylized, sterilized, stuccoed progress. For instance, there is the Andalusian air of the Hotel Colón, downtown, where the tiles and the carved ceiling are transplanted from Seville and a room costs $5.50. The Hotel Colombia has, I daresay, seen a better day, but it faces one of the most delightful little plazas in the Americas. A meal there is certain to be lackluster, but it is served on a balcony hanging so far out into the street that it seems only proper to set a place for Bolivar looking on from his garden of trimmed laurel trees and enormous palms. Behind him soars the Church of San Francisco, and when the patrons eddy from its portals or from the National Theatre on the corner, and look up to the tiled roof trimmings and the arches that adorn the old Colombia, they must surely find their true rapport with the colonialists and the conquistadores.

Panama City's best restaurant is a soft, lantern-lit enclosure in the Hotel Internacional, a modest but reputable inn that occupies a corner of the frantic Plaza 5 de Mayo. In the quietude of the suburbs to which the Hilton and the Continental both escaped, there is the small, modern Hotel Lux, where single rooms are $10 a night and tables are set in a garden decorated with stone lions, benches for contemplative interludes, and banana plants that have been taught to erupt in leafy fountains of green.

Although the Republic of Panama includes 1,000 islands, many of them inhabited by colorful Indians, and although the waters that wash its narrow neck of territory are among the best fishing grounds in the world, its biggest show, even since the day it opened just before World War I, has been the canal. It took a 1956 convocation of sixteen Presidents to inspire the building of a pavilion where spectators may sit in a grandstand now, and watch the ships work their way through the Miraflores Locks. Last year the canal company finally added a guide service, hiring half a dozen bilingual lovelies who explain the complicated operation. The guide service even has a fancy telephone number, Balboa 1492, but more ambitious explorations of the canal, beyond a seat in the bleachers, are rather difficult to arrange. A commercial water tour of the canal has been discontinued, and although the Panama Canal Company maintains a pair of comfortable sightseeing boats, they will leave port only for visitors who arrive in a group. Since local travel agents are enjoined from exacting charges for such trips, they make little effort to arrange group tours. Occasionally, the agents say, if you know someone on the Grace Line, and if you are prepared to spend eight hours in transit, a friendly skipper will agree to put you on board for the regular weekly passage of its cruise ship.

Fortunately, during my days in Panama I was able to join a Peace Corps sanitation team which, before taking off for the Panamanian hinterlands in the interests of native health and cleanliness, was receiving a practical briefing on the nation. We sat for a while in the bleachers at Miraflores, and then, while the gates were closed and the locks filling with water, we skittered across the narrow walkway atop the doors. Ships edging in from the Pacific are lifted twenty-seven feet in the first chamber, then another twenty-seven feet in the second. At that point they are level to sail across Miraflores Lake to the Pedro Miguel Locks for the ride through Gaillard Cut, which passes over the Continental Divide.

THE small sightseeing tug we boarded rested at eighty-five feet above sea level, and it was soon puffing along past some of the most historic spots of the canal. Up on the heights we could see Paraiso, a town now in the U.S. Canal Zone whose origins go back to the French efforts at canal digging. We chugged past Cucaracha Slide, which in 1915, shortly after the canal had been opened, slid into the passageway, bringing the operations to a halt. High above us now rose Contractor's Hill, decorated with a plaque to Colonel Gaillard, who engineered the project. Picnickers can spread their lunches on top of the hill now and gaze alternately at the ships passing below and at Gold Hill across the cut. Gold Hill recalls the promises of the French promoters who, in the pre-American days, promised the prospective underwriters that they might benefit from the gold in this hill as well as from the tolls to be paid by ships.

The French under Colonel Ferdinand de Lesseps inaugurated the canal project in January of 1880, but disease and dissension forced the formation of a new French company in 1894. Work moved slowly and the United States, whose interest in such an undertaking had stirred the thoughts of Benjamin Franklin, Henry Clay, and Calhoun, bought the French rights and properties in 1904 for $40,000,000. At that time Panama was a part of Colombia. The Colombian Senate failed to ratify the treaty with the United States, and Panama revolted, declaring its independence from Colombia. Its new government promptly ratified the treaty.

In ten years the U.S. had conquered

(Continued on page 53)

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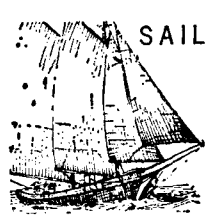

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LITERARY HORIZONS

The Thirties: A Reappraisal

IN THE past few weeks, as I have been gathering material for a lecture on American literature in the Thirties, I have been wondering what the future will make of that troubled decade. Certainly there is more to be said about it than has been said yet, and this is even more true of its literature than it is of its politics. When the writing of the decade is re-examined, as it will have to be, many judgments are bound to be altered.

The decade, as everyone knows, was intensely political, and for good reason. Few writers could ignore such a phenomenon as the Depression, and most of them took firm positions, usually on the Left and often enough somewhere within the Communist sphere of influence. After Communist pretensions had been discredited by the Moscow Trials, the exposure of the Communist role in the Spanish Civil War, and the Soviet Union's pact with Nazi Germany, most of the fellow travelers turned against the party. Many of them, moreover, repudiated not only Communism but also political involvement of any sort.

Furthermore, a change in literary fashion had long been in process. In a general way, the realistic novel concerned with social and political and economic problems had been dominant for two or three decades. In the later Twenties this tradition had been under attack, but it had been given new strength by the Depression. Now, with many slogans of the Thirties thrown into the discard, young writers with different ideas came to the fore. They were interested in the individual rather than society, and in psychological and ethical rather than social problems, and they were much more concerned with literary form and with all sorts of experimentation than the realists had been. Joyce, Dostoevsky, Kafka, and Henry James were among the new gods.

As new literary interests developed, there was a drastic revolution in literary taste. Faulkner and Fitzgerald, who had been largely ignored in the Thirties because they were not much affected by the Depression and seemed isolated from the mainstream of American life, were now greatly admired. Characteristic writers of the Thirties, such as Dos Passos, Farrell, and Steinbeck, were downgraded. The work Hemingway did in the Twenties was rated higher than the work he did in the Thirties. Much of the fiction of the decade—the so-called proletarian and socially conscious novels—was thrown out on the rubbish heap.

As usual, reaction has gone too far, and we can expect a re-evaluation of the Thirties. As I have been thinking about the literature of the period and taking a look at this book and that, it seems clear to me that the decade produced at least three novels that deserve to be remembered and almost certainly will be. I am not saying that they belong with the very best of American literature, but they are too good to be ignored.

The first is John Dos Passos's *U.S.A.*, the most ambitious attempt an American writer has ever made to show American life in all its complexity and to find some sort of pattern in it. Much has been written about the varied techniques Dos Passos used to get the effect he wanted, and these devices are ingenious and important. But what made the work so moving in its time—and can still, I have found, move college students—is its passion. About Dos Passos's politics there have been many arguments, and I suspect that he wasn't altogether clear himself, was changing his mind even as he wrote the trilogy; but his strength of feeling is unmistakable, and it gives enduring life to the book.

The second is James T. Farrell's *Studs Lonigan*. In this extremely long and sometimes oppressively detailed record of a wasted life, Farrell examined a much smaller portion of the American scene than Dos Passos had scrutinized; but what he did, he did thoroughly. He was consciously portraying the decay of a society as well as the decay of an individual, and at the end of the trilogy, as Studs lies dying, his father watches a radical demonstration. If naturalism as a method has large limitations, as I believe it does, it can powerfully achieve certain sorts of literary effect, and this has rarely been better demonstrated than by *Studs Lonigan*.

The third novel is John Steinbeck's

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The Grapes of Wrath, which is an almost perfect example of the novel of social protest. In dramatizing the plight of the Okies, Steinbeck had a good cause, and he knew how to arouse sympathy. Some of the characters, it has been said, are sentimentalized, and some incidents are not wholly convincing; but the force with which the novel drives ahead is almost irresistible. If one can see in the book some of the flaws that vitiated Steinbeck's later writings, one feels and responds to a degree of power that he has never equaled since.

There are other novels that ought to be reconsidered. I am happy that Hill & Wang has just published Jack Conroy's *The Disinherited* in its American Century Series. As Daniel Aaron says in his introduction, "Conroy makes us believe in the genuineness of his experience and the reality of the worker's life he describes, and in addition he presents this world in a way that is by no means characteristic of the proletarian school."

Many writers who have been brushed aside as members of the proletarian school may turn out, on second thought, not to fit comfortably into that pigeonhole. When Robert Cantwell's *Land of Plenty* was published in 1934, it was discussed, by both conservatives and radicals, as simply a strike novel, but surely it was more than that. Josephine Herbst's trilogy—*Pity Is Not Enough, The Executioner Waits,* and *Rope of Gold*—has never, so far as I know, been given the kind of critical examination it deserves. Certainly some of the left-wing novels published in the Thirties are as dead as Joseph Stalin, but we had better not assume that this is true of all of them.

I AM not arguing for a return to the standards of the Thirties, which I should lament. Political involvement and a concern with social problems are not necessarily virtues in a writer, and they may create serious dangers. Moreover, if the problems with which most contemporary novelists deal seem very small indeed, they can point the way—and they do in the hands of our more skilful writers—to some of the large problems of the human condition. There may be more insight in a novel about a schoolboy on the loose than in a novel about the political and industrial lords of our society.

No, I am merely saying that the writing of the Thirties has to be given another and more searching look. Such an examination, I am confident, would make the decade seem much less simple than we tend to suppose and much richer in literary achievement.

—GRANVILLE HICKS.

THE CRYSTAL BALL

Decision by Necessity

The Coming World Transformation, *by Ferdinand Lundberg (Doubleday. 395 pp. $5.75), predicts broad lines of development in government, economics, and education during the next 150 years. William Diebold, Jr., serves as the director of economic studies for the Council on Foreign Relations.*

By WILLIAM DIEBOLD, JR.

IN FAIRY tales people who are given a glimpse of the future often do not like what they see. Some readers of Ferdinand Lundberg's *The Coming World Transformation* will feel the same way, especially those who are hopeful about the underdeveloped parts of the world. During the next 150 years, Mr. Lundberg predicts, "the backward nations will remain relatively backward." Only "high mortality rates . . . achieved by famine, diet-deficiency diseases and localized warfare" will keep down the population. And, because stringent political rule will be required, "for most of the world . . . the future belongs to dictatorship for all the time that is readily forseeable." It is also, he says, "going to be a difficult, virtually impossible job to raise appreciably the cultural level of population in underdeveloped lands. . . ." Africa gets particularly low marks from Mr. Lundberg, China and India appear harder to judge, while the countries of Latin America may get ahead, he believes, if they establish better governments and then unite.

In the advanced parts of the world, the situation may not be so bad, depending on your point of view. According to Mr. Lundberg, change will come more rapidly than in the last century and a half. Automation will eliminate many jobs but the author is relatively optimistic about the demand it will create for more skills and services, as he is about society's ability to provide the necessary education. Those who cannot cope will be taken care of "at rather high minimal standards." Future class lines will be "between the skilled and the unskilled, the educated and the uneducated. The line will become increasingly sharp between the more educable and the less educable."

The concentration of ownership and control in business will continue, with monopoly often replacing oligopoly. More economic decisions will be centralized. Government will become "a gigantic social service institution." In the United States federalism will give way to a system in which state and local activities will be directed from Washington. In Western Europe further unification is more likely than Soviet domination, the only real alternative. There are some possibilities of a reduction in Soviet aggressiveness and better ones of a weakening of the Russian partnership with China.

Mr. Lundberg reached these and many more conclusions by a method he would like us to call prognostics, which is simply a fairly imaginative effort to look ahead, disciplined by certain principles. Two are of key importance. One is that the main line of causation in social change runs from technology through economics to politics. The other is that change comes not from voluntary decision or the rational exercise of free choice but from necessity "forced by existing or impending crisis." Those in charge will "behave as though they were acting on the basis of a decision, but the decision is always one of choice between order and chaos and seldom any more." Mr. Lundberg does not claim infallibility, nor does he predict specific events or time schedules. His statements are about broad lines of development that he regards as highly probable in government, economics, and education.

APART from challenging Lundberg's basic principles of social change, I find weaknesses in his application of them. Though he postulates important technological and scientific advances, his economic predictions seem to rely heavily on present-day technology, especially that of coal and steel, and he makes little allowance for the possibility of new discoveries of raw materials. An application of this kind of prognostics in 1800 would not have yielded a picture of the United States in 1950. Mr. Lundberg's only mention of oil is the observation that the remaining supply will most likely be exhausted in a century.

The author may also be putting too much faith in existing methods of prediction in specialized fields. In his presidential address to the American

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Economic Association last December Edward S. Mason said, mildly,

> When one considers the outcome, during the last year or two, of short-term forecasts undertaken by some of the most respected of our colleagues both in and out of government, it is difficult to resist the conclusion that there are some things about the functioning of the economy that we do not yet know.

Lundberg disarms much criticism by the modesty of his claims, his avoidance of the pseudo-scientific pomposity and pride of invention that so often go with efforts of this kind, and his interest in stimulating other people to prognosticate. (If they did, would consensus on gloomy prognoses tend to make the prophecies self-fulfilling or self-resisting, thus modifying Lundberg's deterministic principles?) One can certainly agree that it is a vulgar error to suppose that the differences between the natural and social sciences make it impossible to think ahead or to judge the results in some systematic fashion. Yet one must approach a venture like this with continuing skepticism. Meanwhile, however, Lundberg makes you think, and about a wide range of questions.

The Worm in Eve's Apple

Ascent of Woman, *by Elisabeth Mann Borgese (Braziller. 247 pp. $5), suggests that human beings may someday emulate the annelid worm and change their sex at certain periods in the life span. Lillian Smith has written numerous essays about the status of women.*

By LILLIAN SMITH

THIS speculative book belongs to the hours after midnight when everyone's left the party except a few who can't unwind and who stay behind to spin their pet hypotheses. Although as entertaining as the usual after-the-party talk, *Ascent of Woman*, by the daughter of the late Thomas Mann, is hardly more important.

Elisabeth Borgese's pet hypothesis is that women and the collective have much to do with each other. She quotes Florida Scott-Maxwell, who says, "Women's emergence has come at the same time as our marked collectivity, our drift toward crowd values, our belief in an equality so loosely and widely held that it resembles a passionate longing more than a belief that everyone and everything shall be as alike as possible." This confusing of coincidence with cause and effect is indulged in also by Mrs. Borgese.

The crowd is here, yes; but so is the individual. The right to be different is the right most of us are actually striving for, not the right to be "equal." How could human beings be equal? When one works for men's and women's equal rights as human beings, one is not asking for "equality" or conformity but for the right to grow according to one's individual capacity.

Mrs. Borgese does not persuade; on the contrary, she annoys by her persistent trick of backing up her improbable statements not with research but by quoting, as in the foregoing example, somebody who has said something equally fantastic. Her pages are filled with quaint, often startling facts about animals, birds, bees, and fish; this is to make us listen when she goes on to suggest that similar metamorphoses can happen to men and women. "The annelid worm," she says, "spends its youth and adolescence in maleness; at the zenith of maturity it switches to femaleness." After this prologue, Mrs. Borgese talks seriously about the human being switching his or her sex at certain periods of the life span; maybe it can't happen now but just wait half a million years. I, for one, would not say it couldn't, but the author has not convinced me it could.

Mrs. Borgese works on what are to her basic premises, but actually they are highly questionable notions. She assumes that women are inferior to men; she attributes qualities and characteristics to them that are often obviously untrue; and, like quite a few imaginative males, she is caught by the dark womb symbol, equating it with a vast actuality that lies in the field of science rather than poetry.

THE author's habit of flinging words around loosely, words that have many meanings for many people, increases one's confusion. And her sense of hurry stifles the reader's curiosity. As she flies by us into outer space, Mrs. Borgese voices many partial truths, but they sound like little yelps of delight at her own brilliance. Yet everything she says in the book might have been significant had it been explored thoroughly and in depth. While reading *Ascent of Woman* I kept thinking of Pierre Teilhard de Chardin's *The Phenomenon of Man,* which is truly a great venture by a scientist and philosopher into the speculative realm. But the difference in the two books is immeasurable.

I am sorry to be so harsh, but we who write owe ourselves time and more time to think through carefully, maybe for years of disciplined study, what we say when we leave the field of fiction.

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Best of All Possible Tomorrows

Profiles of the Future: An Inquiry Into the Limits of the Possible, *by Arthur C. Clarke (Harper & Row. 234 pp. $3.95), foresees controlled weather, robot servants, and the power to become subjectively invisible. Edwin Diamond is writing a book about the social and political aspects of the space boom.*

By EDWIN DIAMOND

THE WHOPPERS committed when established scientists attempt to predict the future form an entire subspecies of humorous literature. Writing at about the time the Wright brothers were tinkering in their shop, the astronomer Simon Newcomb concluded:

> The demonstration that no possible combination of known substances, known forms of machinery, and known forms of force can be united in a practical machine by which man shall fly long distances through the air, seems to the writer as complete as it is possible for a demonstration of any physical fact to be.

Four decades later, in 1945, after the fact of the German V-2 rockets, the distinguished Vannevar Bush, chief of the U.S. scientific establishment, told a Senate committee:

> The people who have been writing these things that annoy me, have been talking about a 3,000 mile high angle rocket shot from one continent to another, carrying an atomic bomb and so directed as to be a precise weapon which would land exactly on a certain target . . . I say, technically, I don't think anyone in the world knows how to do such a thing, and I feel confident that it will not be done for a very long time to come.

Arthur Clarke, who has collected these and similar samples in *Profiles of the Future*, ascribes them to failure of nerve—missing the shape of things to come even when all the relevant facts have been given. At other times, there may be a failure of imagination, an inability to take the leap from the available facts into the undiscovered. The physicist Lord Rutherford, for example, was able to visualize the atom's interior but couldn't foresee the harnessing of nuclear energy.

Mr. Clarke himself has never suffered seriously from lack of either nerve or imagination. A veteran author and prognosticator, he made in 1945 the first public proposal for worldwide television via a network of communications satellites. The experimental Syncom satellite launched early in February marked a major step toward realization of this idea. Two years later Mr. Clarke hit a bull's-eye by saying that the first unmanned rocket flight to the moon would occur in 1959, but he also visualized manned satellites by 1970, a date Yuri Gagarin beat by nine years.

These short essays mainly bypass the near future and nimbly jump into the twenty-first century and beyond. His purpose, Clarke says, "is not to describe *the* future but to define the boundaries within which possible futures must lie." The technique has certain advantages: the reader can glide quickly through the "familiar future"—controlled thermonuclear power, Ground Effect Machines that skim across fields and rivers on a cushion of air, conveyor-belt sidewalks, computer-steered autos—and enter the far-out future of the fantasist.

THE best pieces in the book deal with antigravity machines, Einstein and space-time, and the possibilities of instantaneous transportation, perhaps by a teleporter that would use an X-ray-like scanning device to "transmit matter." There is also discussion of the chances for human invisibility—not objectively by means of a Wellesian drug like the one that gave Claude Rains the same optical properties as air, but subjectively, through hypnosis or subliminal suggestion. And, finally, there is a chart of the future that attempts to place the scientific achievements to come in some sort of chronological order. The year 2020 A.D. looks like a good one: Clarke predicts that around then we will have weather control, robot servants, and the control of heredity.

Unfortunately, Mr. Clarke advances these intriguing speculations in a "popular science" style that should have gone out with the stereopticon and the biplane. His transitions are cornball ("Let us pluck up our courage and . . . strike out along this dubious path."). His asides are gratuitous ("Weightlessness will open up novel and hitherto unsuspected realms of erotica. And about time too."). His social thinking is muddled. What does "every civilization is like a surf rider, carried forward on the crest of a wave . . ." mean?

The new frontier of space and science, the author notes, needs its Homers and its Conrads. Mr. Clarke, alas, is not one of them.

Your Literary I. Q.

Conducted by John T. Winterich

A CELESTIAL SELECTION

"Naturally (or supernaturally?) as a clergyman, I would be interested in Heaven," writes Rev. Arthur McGillivray, S.J., of the faculty of Boston College, Chestnut Hill, Massachusetts. Hence the twenty titles below, largely of novels, which he asks you to match with the correct authors. Answers on page 53.

1. "Mechanism of the Heavens"	( )	Charles Calitri
2. "At Heaven's Gate"	( )	Norman Corwin
3. "Ploughshare in Heaven"	( )	Louis deWohl
4. "Strike Heaven on the Face"	( )	Rachel Field
5. "Hold Heaven in Your Hand"	( )	Mme. Sarah Grand
6. "All This and Heaven Too"	( )	Pierre Simon Laplace
7. "The Heavenly Twins"	( )	Norah Lofts
8. "Heaven's My Destination"	( )	Robert McLaughlin
9. "Embezzled Heaven"	( )	May Sinclair
10. "Nigger Heaven"	( )	Jesse Stuart
11. "Leave Her to Heaven"	( )	Carl Van Vechten
12. "The Tree of Heaven"	( )	Robert Penn Warren
13. "Good Heavens"	( )	Franz Werfel
14. "The Walls of Heaven"	( )	Thornton Wilder
15. "Lay Siege to Heaven"	( )	Ben Ames Williams

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The Principle of Privacy

The Wolfenden Report: Report of the Committee on Homosexual Offenses and Prostitution *(Stein & Day. 243 pp. $5.95), presented five years ago to the British Parliament, takes the position that "morally evil things, so far as they do not affect the common good, are not the concern of the human legislator." John M. Murtagh, who is co-author with Sara Harris of "Cast the First Stone," a study of prostitution, is administrative judge of the Criminal Court of the City of New York.*

By JOHN M. MURTAGH

THE WOLFENDEN REPORT was presented to the British Parliament in September 1957 by a committee drawn from the clergy, medicine, sociology, psychiatry, and the law, under the chairmanship of Sir John Wolfenden, C.B.E. Written in nontechnical language, it is an important work of general interest and of particular interest to those concerned with a sound philosophy of the criminal law. The present publication is an American edition, with an introduction by Dr. Karl Menninger.

The Report deals with the criminal law in relation to both prostitution and homosexuality. Its basic conclusion is that the law should make no effort to interfere in the purely private relations of adults where the element of seduction or duress is absent.

The committee recommended that, though prostitution should not itself be made illegal, legislation should be passed "to drive it off the streets" on the ground that public solicitation was a nuisance; and it recommended that overt acts of a homosexual nature between consenting adults in private should no longer be a crime.

It is of interest that these subjects have in recent years been the occasion of similar consideration in the United States. The draft Model Penal Code published early in 1955 by the American Law Institute contained a recommendation that all consensual relations between adults in private should be excluded from the criminal law. The philosophy underlying this recommendation was stated to be that "no harm to the secular interests of the community is involved in atypical sex practice in private between consenting adult partners"; and that "there is the fundamental question of the protection to which every individual is entitled against state interference in his personal affairs when he is not hurting others." The recommendation was approved by the advisory committee of the Institute but was rejected by a majority vote of its council. The issue was then referred to the annual meeting of the Institute at Washington, D.C., in May 1955, and the recommendation, supported by the eloquence of the late Justice Learned Hand, was, after vigorous debate, accepted by a majority vote of thirty-five to twenty-four.

It is regrettable that the only legislation as yet enacted as a result of the Wolfenden recommendations is of questionable value, designed to curb the activities of streetwalkers. No changes have been made regarding the laws dealing with homosexual conduct.

The significance of the Wolfenden Report, however, lies not so much in the fate of the committee's recommendations as in the principles that led to their adoption.

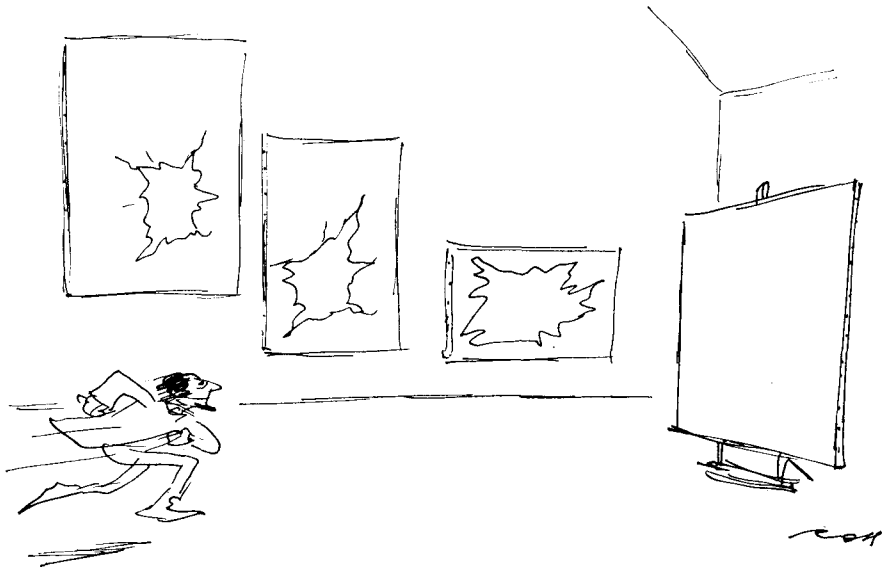
In his recently published *Law, Liberty and Morality*, Professor H. L. A. Hart of Oxford University states that these principles are strikingly similar to those expounded a century ago by John Stuart Mill in his *Essay on Liberty*. He refers in particular to Mill's observation that the "only purpose for which power can rightfully be exercised over any member of a civilized community against his will is to prevent harm to others."

It appears though that the principles of the Wolfenden Report are more likely derived from the Thomistic philosophy that the function of criminal law is limited, that primarily human law should implement the moral law only where violations thereof affect the common good, and that sanctity will always remain an individual affair. The Wolfenden committee not only included members of the clergy, but it sought and obtained advice and guidance from those in the Anglican and Roman Catholic churches.

Thus, seven Catholic clergymen and laymen appointed by the late Bernard Cardinal Griffin, Archbishop of Westminster, submitted a report to the committee that stated, among other things:

> It is not the business of the State to intervene in the purely private sphere but to act solely as the defender of the common good. Morally evil things so far as they do not affect the common good are not the concern of the human legislator.
>
> Sin as such is not the concern of the State but affects the relations between the soul and God.
>
> Attempts by the State to enlarge its authority and invade the individual conscience, however high-minded, always fail and frequently do positive harm.

It is the failure to apply these principles, not only in legislating as to sex deviancy but as to antisocial con-



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duct generally, that is the great weakness of the criminal law in the U.S.

There was a healthy recognition of this failure in the repeal of the Eighteenth Amendment and the Volstead Act. We had attempted to solve the problem of alcoholism and excessive drinking by prohibiting the sale of all liquor. Little thought had been given to the moral right of society so to legislate. Less consideration had been given to the futility of such legislation, to the corrupting effect on those charged with its enforcement, and to the tendency of such legislation to breed organized crime. We are still suffering from the adverse effects of this experiment.

We are currently making a similar error in trying to curb the evil of drug addiction. Experience has amply demonstrated that the attempt to legislate addiction out of existence is largely futile. Moreover, the federal and local enforcement programs have done much to sustain organized crime and have a strong tendency to corrupt enforcement officers. They are doing much to demean the administration of criminal justice.

So it is with our attempt to curb gambling by prohibitory legislation. There continues to be widespread gambling. The underworld is thriving on our hypocrisy and stupidity. There is almost universal corruption among the police assigned to gambling enforcement. The enforcement program makes a farce of judicial proceedings.

To the degree that the Wolfenden Report gives currency to the fundamental principles that inspired its recommendations it will have justified the labors of the committee.

The Not So Golden Years

The Health of Older People: A Social Survey, *by Ethel Shanas (Harvard University Press. 250 pp. $6.00), surveys vital problems of a percentage of our population that has more than doubled since 1900. Almont Lindsey, who wrote "Socialized Medicine in England and Wales," is professor of history at Mary Washington College of the University of Virginia.*

By ALMONT LINDSEY

THE IMAGE of the aged person in the United States has been that of someone lonely, sick, and indigent, suffering from inadequate medical treatment and otherwise neglected by society. While this is true of some older people, it is certainly not characteristic of the great majority, as this excellent study clearly demonstrates.

In 1957 the staff of the National Opinion Research Center interviewed a cross section of the older population. Those in institutions (3 to 5 per cent) were excluded from the survey, but every effort was made to select individuals representative of all other segments of the elderly population. A total of 1,734 persons aged sixty-five and older were interviewed at length. While this group was the primary concern of the Research Center, the sixty-to-sixty-four category was also brought within the purview of the survey, as well as the children and other relatives of all who were interviewed. The statements of these last on the health problems of the elderly add to the value of the study.

The survey sought answers to such questions as: How sick are older people? What use do they make of medical care? What are their health needs as they see them? To what extent is their medical care financed from their own resources, by their children and other relatives, or from public assistance?

The answers suggest a high rate of illness among older persons, largely diseases of the circulatory system, arthritis, and rheumatism; but only a small number consider themselves to be very sick or unable to carry on their regular activities. The great majority regard themselves as healthy in spite of aches and pains which they associate with their advancing years. Many do without medical care, either for financial reasons or, as seems more often the case, because they feel there is no need for the services of a doctor.

Even so, the elderly in 1957 averaged more contacts with physicians on a per capita basis than did the rest of the population. Many of them, despite their low income, were able to pay their medical expenses out of their own resources: savings, income, and health and hospital insurance. But with the very sick, roughly 14 per cent of the older population, the story is quite different. Here the amount of hospitalization and nursing care was much greater and medical cost considerably higher. A surprisingly large proportion of this group—roughly 40 per cent—looked to their children or other relatives or to charitable and welfare agencies for help if their medical bill approximated several hundred dollars. It is thus not strange that slightly more than one-half of all the older people interviewed were in favor of comprehensive government health insurance, as were a comparable proportion of their children and relatives. Only 40 per cent of those sixty-five and older carried some form of voluntary health insurance during the year the survey was made. Many of the others either could not afford it or were ineligible.

Few of this study's subjects lived alone: 80 per cent shared a household with wife, husband, children, or other relatives. More than three-fourths of the noninstitutionalized aged had living children, but the majority maintained a separate residence that was in close proximity to at least one of their sons or daughters. Sixty per cent owned the houses in which they lived. Most of them wished to remain in their own homes as long as they were physically able to do so, and wanted above all to avoid going to a home for the aged.

These are a few of the highlights of this survey, which puts the older population in clearer perspective. The picture, although not rosy, is certainly quite different from the somber one that has tended to stereotype our thinking about our elderly citizens. The later years are certainly not without meaning for a substantial number.

"Older people in the United States," concludes the book, "want to be independent. They do not want financial support from their sons and daughters. What they want is love, thoughtfulness, and an opportunity to continue sharing the satisfaction of family life. . . . These people look first to themselves and their own resources, and then to the programs of the federal government for the means by which they may live out their lives in dignity and with self-respect."

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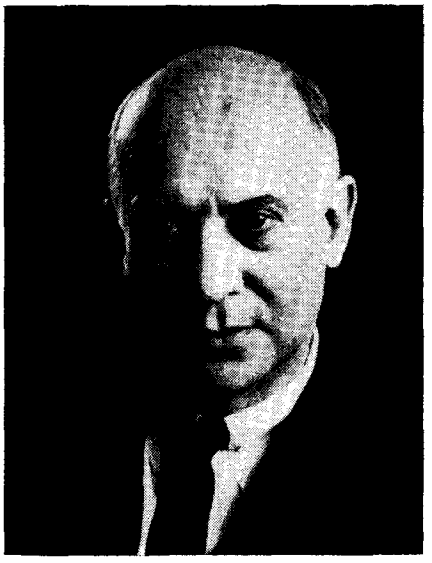
Mandate for Murder

The Deed, *by Gerold Frank (Simon & Schuster. 317 pp. $4.95), tries to explain how environment, a fierce spirit of nationalism, and a gradual acceptance of violence conditioned the members of the Stern Gang who assassinated Lord Moyne. Quentin Reynolds's autobiography will be published next week.*

By QUENTIN REYNOLDS

GEROLD FRANK is that rare literary paradox, a perceptive writer of serious books and an ectoplasmic being who has helped such people as onetime popular singer Lillian Roth (*I'll Cry Tomorrow*), Zsa Zsa Gabor (*My Story*), and the late Diana Barrymore (*Too Much, Too Soon*) to usher their undisciplined thoughts through the keys of his very disciplined typewriter. It is hard to believe that the ghost who perpetrated these lachrymose confessions is the same Gerold Frank who now gives us *The Deed*, a fascinating, carefully documented book, which tells the story of the two Palestinian boys who in 1944 assassinated Lord Moyne, then the highest ranking British diplomat outside London. The young men, Eliahu Bet Zouri (seventeen) and Eliahu Hakim (twenty-two), had never met Lord Moyne and had nothing against him personally, yet, as Frank writes, "they killed him coldly, calmly and with premeditation."

During those difficult years before Israel became a state there were (according to the British concept) three illegal groups of armed men in the then mandated territory. The largest, most respected, and most important was, of course, the Haganah (defense forces). A national army, it reflected the relatively conservative views of Chaim Weitzmann and David Ben-Gurion. The two splinter groups were the left-wing Irgun Zvai Leumi and the terrorist Stern Group, even then known to Palestinians contemptuously as the Stern Gang. This small, independent group never numbered more than 250, but its members were dedicated to the belief that terrorism and murder were potent weapons that could hurry the course of history and bring quick independence to their land. This philosophy horrified the people



—Philippe Halsman.

Gerold Frank—"spellbinding."

of Palestine. I recall Haganah commanders in those years saying bitterly that the Stern Gang was doing more harm to the cause of eventual sovereignty than either the British or the Arabs.

Abraham Stern, the founder of the group, was, surprisingly enough, a poet. He was killed by the British in 1942 (executed might be the better word) and Nathan Friedman-Yellin (equally fanatical) succeeded him. Zouri and Hakim grew up in an atmosphere of violence created by the Stern Gang. Gerold Frank, who has done a remarkable job of research in finding relatives and friends who knew them as boys, does not attempt to excuse the assassination they committed. He tries to explain how environment, a fierce spirit of nationalism, and the gradual acceptance of violence conditioned them for membership in the Stern Group and for their eventual destiny.

Lord Moyne's office was in Cairo, and it was there that the tragedy would be enacted. There were 30,000 Palestinian Jews in the British Army, 15,000 stationed in Egypt. Twelve of these were members of the Stern Group, which by now called itself Fighters for the Freedom of Israel (FFI); among them three were girls. Frank introduces us to those who are still alive and explains the part each had in the preliminary stages of planning the assassination. But, in the final analysis, it was young Eliahu Bet Zouri and Eliahu Hakim who had to make what was actually a suicidal attempt.

To reveal the details here would be to deprive the reader not only of a spellbinding suspense story but of a slice of history beautifully and accurately told. Of course, they succeeded, were captured, were tried and sentenced to be hanged. They used the trial as a platform to air their convictions and rationalize their act. Their sincerity and calm acceptance of their fate impressed not only the spectators (Gerold Frank was one), but many of the Egyptian authorities. After their execution, Dr. Isaiah Selim, a physician, made a call at the home of Mohamed Shoura—the Egyptian hangman. The executioner took the doctor aside and said: "I must tell someone, someone who will understand. . . . This is the first execution in twenty years in which I had the impression that I am a criminal for what I do. I was emotional for the first time."

The bodies of the two boys, buried in the same coffin, now lie in a cemetery outside Cairo, along with those of rabbis and wonder-workers of the medieval Jewish world. Above their grave are the words, chiseled in Hebrew, "Pray for Their Souls."

Did their act of terrorism hurry the cause of independence for their country? No more than the equally appalling assassination of Count Folke Bernadotte in 1948. If the killing proved anything at all, it showed that murder is a pretty futile political weapon, even if performed by expendable idealists.

The Deed is by far the finest book Gerold Frank has ever written; it is easy to read but awfully, awfully hard to forget.

FRASER YOUNG'S LITERARY CRYPT NO. 1030

A cryptogram is writing in cipher. Every letter is part of a code that remains constant throughout the puzzle. Answer No. 1030 will be found in the next issue.

DGBRNEKHA KV HSM

RNEBKO KQ HSM VNBNP

FW HNVHM.

OFQQFBBA.

———

Answer to Literary Crypt No. 1029

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—H. ADAMS.

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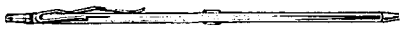

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No Sound, Only Fury

***Brotherhood of Silence,** by Stefan Ilok with Lester Tanzer (Luce. 336 pp. $5.50), portrays Slovak underground guerrilla fighters. Henry C. Wolfe, who is author of "The German Octopus" and "The Imperial Soviets," has known Slovakia well for four decades.*

By HENRY C. WOLFE

DURING World War II underground resistance forces fought the Nazis in France, Italy, Eastern Europe, and the Balkans. When the Nazis were defeated and the Soviets occupied most of Europe east of the Elbe, the underground fighters, with few exceptions, took on the Communist "liberators." For several years there was bloody fighting in many places between Red troops and anti-Soviet guerrillas such as Lithuania's "Men of the Amber Coast," Rumania's "Waves of the Danube," and Slovakia's "Mountain Lads."

Brotherhood of Silence is the story of the Slovaks' struggle for independence, first against the Nazis, then against the Communists. "Stefan Ilok" is the pseudonym of a Slovak underground leader who is vouched for by American officials. The American Third Army rescued him from Mauthausen, the Nazi concentration camp, where he was under death sentence as a *Judenfreund*, a "friend of the Jews."

The Slovaks, Ilok reminds us, had a sovereign state and a Western culture as far back as the ninth century. Many of them disliked being linked with the dominant Czechs in the post-World War I state of Czechoslovakia. They were less Pan-Slavic than the Czechs. Nevertheless, in 1944 the Slovak underground forces kept three Nazi divisions tied down and gave signal aid to the advancing Soviet troops. After the Nazis had been driven out, however, the Slovaks realized that Brown subjugation had merely given way to Red. Many of the anti-Nazi guerrillas then turned against the Russians, whom they are still clandestinely resisting.

Ilok's account of the unequal struggle is replete with cloak-and-dagger intrigue, sex (sometimes overexplicit), violence, sacrifice, and deeds of fanatical devotion to freedom. The underground fighters were mostly peasants, students, workers, and simple people. They endured unimaginable suffering. "The regular soldier on the battlefield," Ilok points out, "has trained medical corpsmen, ambulances and doctors. . . . The guerrilla seldom does. If he is lucky and his companions will carry him away, he can look forward to a muddy hole in the ground, in the heat of summer or the cold of winter, with only the crudest of first aid." For an underground man captured by either Nazis or Soviets there was, of course, no quarter.

Ilok's protagonist is Filip Polhora, a young underground courier whose missions take him back and forth through the Iron Curtain and into all parts of Slovakia. Leonora, whose home is on the Slovak-Austrian border, is his fiancée. Another outstanding hero is Father Michael, head of a Roman Catholic order and a leader in the "Church of Silence," which is composed of underground clergymen who, in defiance of state proscription, say Mass and administer the sacraments. Polhora is eventually betrayed but escapes to the West. Leonora is not so fortunate.

Brotherhood of Silence reads like hair-raising fiction. At the same time, it has every appearance of being an authentic report from one front in modern Europe's fight for freedom.

Because the Kremlin has turned Slovakia into an arsenal, what goes on there is of prime concern to Western intelligence agencies. American foreign policy, however, is apparently committed to the assumption that Czechoslovakia is a unified nation. The nationalistic Slovak underground, accordingly, is kept at arm's length. Even so, some Washington officials are interested in the highly important technical and strategic information that the Slovak underground described in this book sends to the West.

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Look Homeward to Liége

Pedigree, *by Georges Simenon, translated by Roger Baldick (London House & Maxwell. 543 pp. $4.95), describes the first sixteen years of a youth whose family and environment closely parallel the author's. Maggie Rennert is an editor and critic whose poetry has appeared in SR.*

By MAGGIE RENNERT

THE PROLIFIC Belgian who has demonstrated in many novels and for many years how much can be seen from the corner of the eye attempts, for the first time in his career, an intensely personal subject. *Pedigree,* which, in a rather petulant preface, Georges Simenon implores us not to term an autobiographical novel, describes the events—"for the most part . . . not invented"—of the first sixteen years in the life of Roger Mamelin, whose childhood environment is "very close to reality." The theme calls for a long, deep look; Mr. Simenon's characteristic sidelong glance is inadequate to it.

Publication of this nonautobiographical novel with real aunts and uncles in it resulted in such a buzz of lawsuits —followed, it appears, by judgments for heavy damages—that the badly stung author abandoned the two volumes originally scheduled to follow. Further, this edition has been pruned of all material that might encourage continued writ-writing. It is difficult to guess what can have been excised, but even this wariness is not likely to have made Mr. Simenon any more popular back home than Thomas Wolfe was in North Carolina after the appearance of *Look Homeward, Angel.*

In fact, the similarity goes beyond wrangles over how characters are born. For, despite Simenon's swift and sure evocations of the sights, sounds, and smells of Liége in the early years of this century, the heart of his book is its portrait of members of a family trying to live with each other and often not making it. Dominating more than half the pages is Roger's mother, ambitious for her son, contemptuous of her husband, distrustful of the world. Though Eliza Gant nursed nickels and Elise Mamelin socked away sous, they ran their sons and their boarding-houses with equally pathetic enslavement to an insatiable need for security.

In an age of jerry-built fiction there is a certain immediate pleasure in reading an "old pro" for his welcome level of narrative competence; but the plot's reminders of Wolfe point up a lack in Simenon that, in the end, turns on and destroys his virtues. Simenon's curious impassivity, acceptable enough in the adventures of Inspector Maigret, is unwelcome and out of key with the necessarily emotion-ridden central involvements of this book. Without actually longing for Roger Mamelin to claw the scenery *à la* Eugene Gant, we are nevertheless led to the suspicion that playing it cool in these circumstances demonstrates not technical control but lack of insight.

A psychoanalyst might ponder on why so much skill at direct observation stops so markedly short of feeling whenever Roger's relations with his parents are confronted. The ordinary reader, however, simply reacts like a kissless bride, furiously ticking off the flaws that didn't matter in the courtship days: the choppy, incomplete sentences; the scenes so often told about rather than shown; the clumsy, hasty shifts in point of view. All of which could have been forgiven, if Simenon/Mamelin had only delivered.

Georges Simenon—"playing it cool."

The Boys Return to Gettysburg

An End to Bugling, *by Edmund G. Love (Harper & Row. 150 pp. $3.50), tells what happens when Supreme Commander Michael, Archangel, 1st Class, Chief of Staff. orders the re-enactment of the original march to Gettysburg. Burling Lowrey is the editor of "Twentieth Century Parody."*

By BURLING LOWREY

WITH the Civil War Centennial having, in too many instances, degenerated into monstrous trivia passed off as history, and re-enactments of battles passed off as patriotism, it is appropriate that a book should come along spoofing such absurdities as the replay of the First Battle of Bull Run, which horrified sensitive Washingtonians in the summer of 1961. Edmund G. Love's *An End to Bugling* goes the various Centennial committees one better by having General Jeb Stuart's army of 5,000 cavalrymen return to earth in the flesh to re-enact in 1963 their original march to Gettysburg. The purpose is given in a communiqué, signed "By Order of the Supreme Commander Michael, Archangel, 1st Class, Chief of Staff":

> It is hoped that this re-enactment will demonstrate what the Civil War was really like. For some little time certain quasi-public commissions, patriotic organizations, authors, and other self-styled authorities have been engaging in discussions, mock battles, and other rites, which have tended to deviate a considerable distance from the actual truth. It is expected that this exercise will put an end to the bugling and that people will be able to get back to work on more important things.

Mr. Love cleverly puts the kibosh on the distortions of the Civil War buffs by prefacing most of his chapters with quotes from such reliable sources as *Lee's Lieutenants* and *Jeb Stuart: The Last Cavalier,* giving exact

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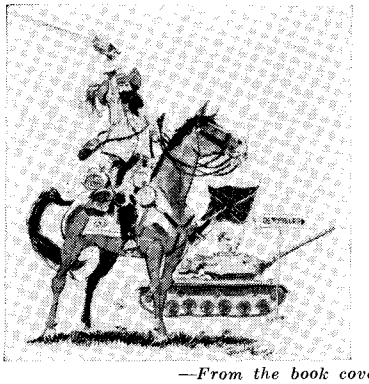
details of the original campaign, and by reproducing maps of the original route in both the front and back of the book.

The humor, of course, is focused on mistaken identity, misunderstandings, confusions, and the snafus that can result when Americans confront one another across a gulf of 100 years. The fantasy offers Mr. Love a splendid opportunity to lampoon such contemporary phenomena as credit cards, mechanized warfare, wild parties on country estates, and freeway traffic, and at the same time to deflate some of the romantic nonsense about the common soldier of the Confederacy that exists among both Northerners and Southerners bent on taking history out of context.

Reactions to Mr. Love's attempts at humor will undoubtedly vary. Those who like their satire subtle will find much of it obvious and strained, as in this scene in which the driver of a truck with Grand Union (get it?) written on the side becomes involved in a colloquy with a Confederate soldier:

> "Are you a Union man?"
> "I sure as hell am," Mulcahy said.
> Yancey looked around the group.
> "Are all these men Union men?"
> Mulcahy looked around pugnaciously.
> "You're damned right. And they're *good* union men."

Real boffo stuff like this appears throughout the book, much of it, in



—From the book cover.

this reader's opinion, distinctly unfunny. In Bob Bugg's illustrations, on the other hand, all the Americans of 1963, both military and civilian, have paunches, while the Confederate soldiers look like bearded scarecrows.

What *is* funny, however, is Mr. Love's concept of Civil War-itis being carried beyond the bounds of reason into the realm of preposterous fantasy on the eve of the Centennial of Gettysburg. It would be comforting to know that this book really would bring an end to the bugling, but, alas, the summer of 1963 lies menacingly before us.

One World of Fiction

Modern Stories from Many Lands, *selected and edited by Clarence R. Decker and Charles Angoff (Maryland Books. 316 pp. $5), brings together outstanding stories and chapters of novels originally published in The Literary Review. William Peden is an editor of Story magazine.*

By WILLIAM PEDEN

IN AN interesting and unusual anthology of short fiction of the post-World War II period, Clarence R. Decker and Charles Angoff have selected twenty-four stories and chapters from novels from thirteen countries, originally published in *The Literary Review,* the quarterly periodical sponsored by Fairleigh Dickinson University. In its first five years of publication *The Literary Review* has become one of the important "little magazines" in America. Like other such small-circulation magazines interested in quality rather than gate receipts or big names as such, it fulfills a real need, particularly in view of the steady decay of the periodical market.

It has frequently been said, sometimes by people who should know better and sometimes by uninformed or perverse "critics" or "reviewers" (almost unvariably anonymous), that fiction has been slowly dying since the end of the war, that the novel is an obsolescent literary form, and that the short story is expiring along with the mass-circulation magazine market that nurtured it. Nothing could be further from the truth. Even a superficial familiarity with the good "first" novels published in America during the last five or six years would dispel the myth; so too, if to a lesser degree, will the variety, the vigor, the seriousness of purpose, and the relatively high artistry of these selections from among more than a hundred stories published in one magazine.

Only a small percentage of *Modern Stories from Many Lands* are by what can be called "well-known" writers (America's William Carlos Williams and S. J. Agnon, acknowledged dean of living Israeli writers, are examples); for the most part the collection performs the valuable service of introducing to American readers the work of writers almost unheard of in the U.S. in spite of the fact that some of them are thoroughly established in their native countries, like India's Dhumketa, who has published some forty-five volumes of novels, plays, short stories, and satires. I was most impressed with Elsa Morante's "The Sicilian Soldier," Ennio Flaiano's "Armida and Reality," and Dino Buzzati's "A Siberian Shepherd's Report of the Atom Bomb," a terrifying, fable-like tale. The Netherlands is represented by three fine stories highlighted by Adriaan Morriën's "Hijo de Puta," an unforgettable characterization of "one of those prostitutes of the old sort" and her family.

Other notable works include Orhan Kemal's "Baby Born in the Field," which, along with "Hijo de Puta," is one of several stories of social protest that make some of Upton Sinclair's and John Steinbeck's exposés seem rather tame. I was surprised at the absence of any stories from Yugoslavia, where, I am told, there has been a recent remarkable renaissance of short fiction; and I was disappointed in the two American entries, particularly Kaatje Hurlbut's "Lilli," the longest selection in the book, an overwritten version of the misunderstood, dynamic, ego-drunk artist, in this case a sculptor named Chase King, who seems to be straight out of *The Fountainhead* by way of the slick magazines.

In their introduction Mr. Decker and Mr. Angoff, both of whom are currently on the Fairleigh Dickinson staff, comment on the "abiding vitality and marvelous potentialities of the short story as a literary art form." Their selections justify this praise.

SUICIDAL PROTEST: Whereas the better writers of fiction aim for the reader's heart and hope to reach the brain as well, Edward Loomis, with *Men of Principle* (Viking, $4.50), is shooting straight for the brain and hoping that the reader will feel something in his heart. Certainly, in his story of Sam and George Jackson, and their protest against the world they live in—the first by starving himself to death, the second by deserting from the Army—Loomis is not working with characters with whom the reader can readily identify.

The brothers' decisions are personal

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and selfish. When Edith says to her starving lover, "But you're not really doing anything, are you? You have a conscience, and it's killing you; and so you make dying your profession," the reader must agree all the way.

While, at first meeting, the idea of a man willing himself to death in silent protest against a world that will never know how he felt produces an enormous emotional charge, it rapidly loses its shock value here and becomes a *fait accompli* long before Sam Jackson has breathed his last. A voluntary resignation from life may stand for something in reality but it is in no way as interesting or admirable as a living fight for a better world. If the Jackson boys want to stop the world and get off, that is their affair, but to expect the reader to go along breathlessly with them, committed to their actions, is too much to ask.

Sad to say, since Mr. Loomis writes so well and obviously is part of that shrinking minority of novelists with a purpose to their writing, the ultimate feeling one comes away with from *Men of Principle* is not of having spent time with stimulating men who see things in a fresh way, but rather of having got lost among cowards. There is an old maxim that goes: "It takes a live fish to swim upstream; any dead one can float down." Let us just nod to the Jackson boys as they float by while we go on working against the current and wait for Edward Loomis's next novel.

—HASKEL FRANKEL.

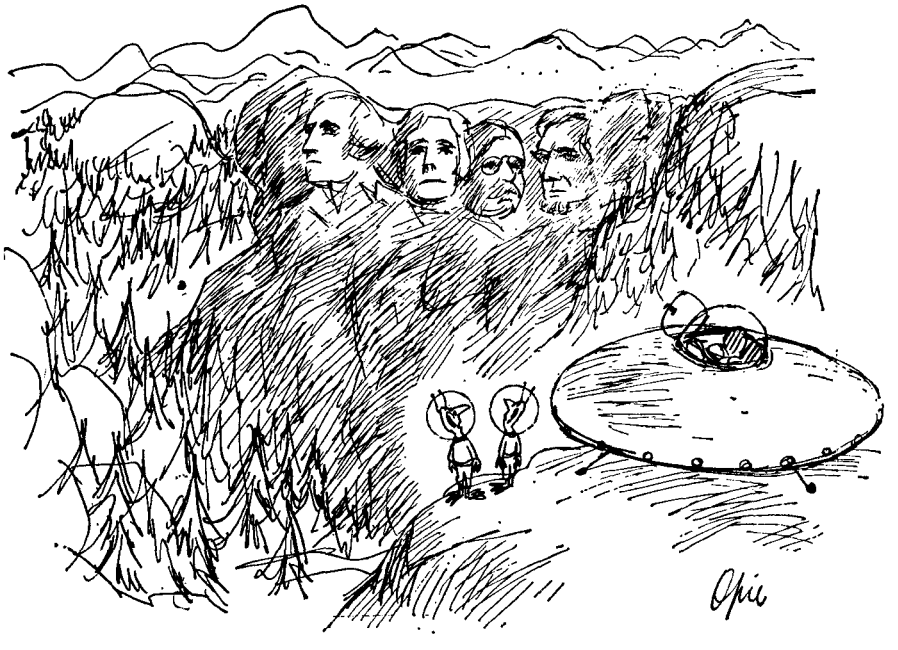
DIGGING THE USA: Ben Birt, the young English hipster who is the non-hero and narrator of Andrew Sinclair's *The Paradise Bum* (Atheneum, $4.50), talks like a man who evidently once read the complete works of Jack Kerouac in a sitting and never quite recovered. "It just came into my mind. I can't control what just comes into my mind," says Ben at one point in the book, and you may be assured that no hip cliché is left unspoken as Ben and his crazy, mixed-up girl, Anabel, dig the USA, from New York to San Francisco.

Unlike home-grown hipsters, both Ben and Anabel are equipped with social consciences of a sort, and as we go on the road we are treated to satirical swipes at the usual American follies. Unfortunately, what Sinclair has to say about conformity and racism and attitudes toward death has been said brilliantly by countless others.

The prose style is, predictably, full of place names ("So we take it down the Sunshine Highway through Savannah, Darien, Brunswick, Woodbine . . . the vast steelworks round the Great Lakes, Buffalo, Erie, Cleveland, Toledo, Detroit."), all as if we hadn't had enough of that sort of thing with good ol' Zen-master-of-us-all, Dean Moriarity of *On the Road*.

The slang may be British and the prose may be racy and tough-guy philosophy may have replaced the self-pity of the Beats, but the outlook is the outlook of Kerouac. Going on the road and all that went with it was fun while it lasted, but after a while it can lead, as I fear it does in *The Paradise Bum*, to car-sickness.

—WILLIAM F. GAVIN.



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—LYNN MILLER, *Publishers' Weekly*.

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—Hal McIntosh.

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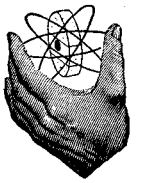

DEPARTMENTS: Research in America • Personality Portrait LXXXV • Science in Books • The Research Frontier • Letters

ARTICLE: The Brain Mines of Tomorrow

RESEARCH IN AMERICA

THE FORGOTTEN MOON VOYAGE OF 1609

VOYAGING from earth to other planets of the sun became a reasonable subject for intellectual speculation in the year 1609. That was when John Kepler, mathematician to the Hapsburg Emperor Rudolph II in Prague, published two of his three great discoveries about the orbits of the planets. Most people of that time still believed that the sun circled the earth once every twenty-four hours; only a few thought that the earth revolved on its own axis while traveling around the sun, and they were of the opinion that the earth followed a circular path. Kepler plotted that path through the sky in relation to the more irregular path of the planet Mars (whose positions had been recorded periodically over several decades with unmatched accuracy by the Danish astronomer, Tycho Brahe) and saw that neither path was a circle; both were ellipses. He also saw that the speed with which a planet traversed its ellipse varied in a regular pattern, accelerating with approach to the sun and decelerating with departure from the sun. By refining the mathematics he used to determine those movements, Kepler could tell where any planet would be in relation to any other planet at any chosen moment, and consequently in what direction and how far an expedition from one planet to another must proceed. Previous to his discovery of the navigational reality, any interplanetary voyage could have arrived at its destination only by the wildest luck.

Three hundred fifty and three years would have to pass before metals could be alloyed for spaceship hulls, fuels extracted for propulsion of those hulls, and electric controls devised for guidance of an actual interplanetary passage from earth to Venus by the robot named Mariner II. But Kepler began to elucidate the scientific problems entailed in such voyages in the same year in which his laws of planetary motion were printed. In the summer of 1609 he wrote out a plan for landing on earth's closest neighbor, the moon.

We can be sure of the date of the manuscript because Kepler told his great contemporary, the Italian astronomer, Galileo Galilei, about it in a letter published in Latin in 1610. Kepler referred to the paper as a "lunar geography;" he explained to Galileo that the purpose of it was to prepare for the time when "celestial boats with golden sails" would be navigated by "people who will not fear the vastness" of the heavens.

Kepler could not discuss this particular project as openly as was his custom. The Lutheran Church, which trained him for its clergy, was as eager to censor writings about sun-centered astronomy in Germany as the Catholic Inquisition was to censor similar observations by Galileo in Italy. Furthermore, Kepler wrote his "lunar geography" at a time of schism in the Hapsburg royal family—the beginning of the Thirty Years War. Therefore, as science advisor to Emperor Rudolph II, Kepler felt that he should offer his interplanetary speculations only to scholars. So he wrote the "lunar geography" in Latin and disguised his scientific reasoning in the allegorical language of a pretended dream.

One of his allegorical figures was a *Daemon* which served as a guide to the moon. Another figure in the allegory was a woman recognizable as Kepler's mother; she summoned the *Daemon* to guide her son. Scholarly readers, Kepler thought, surely would recognize *Daemon* as a derivation from the Greek verb "to know." However, a copy of the lunar allegory got out of Kepler's hands two years after he wrote the manuscript; this copy circulated among superstitious Germans who translated *Daemon* to mean an evil spirit. And Kepler's mother was imprisoned for trafficking with this evil spirit. She was lugged from home in a linen chest in the middle of the night, and put on trial as a witch.

The witchcraft case has already been chronicled in these pages (*SR/Research* for August 6, 1960). Kepler's mother was acquitted and freed, but died shortly afterward from the effects of the ordeal. During the following twenty years, Kepler wrote footnotes to explain the real meaning of his allegory. Among other things, these notes made clear that the *Daemon* in Kepler's manuscript was the spirit of knowledge.

WHEN we read the *Daemon's* statements in the allegory as though they represented all the knowledge that Kepler had accumulated about the moon up to that time, what do we learn?

We learn first of all that Kepler considered it theoretically possible for men to reach the moon if they were ingenious enough to solve a series of given problems.

Although the moon was "50,000 German miles up in the air" and "the journey to it from here is seldom possible," the allegorical *Daemon* said in the since neglected 1609 manuscript, the "exceedingly difficult" passage could be made by those who were willing to run "grave risk to life" and to season themselves for hardship. Some of the specifications:

"No sedentary persons are accepted into our company; no fat ones; no frail ones; we choose only those who have spent their lives on horseback, or have shipped often to the Indies and are accustomed to eating hardtack, garlic, dried fish and unpalatable food."

As an early seventeenth century forecast of the rigorous training which

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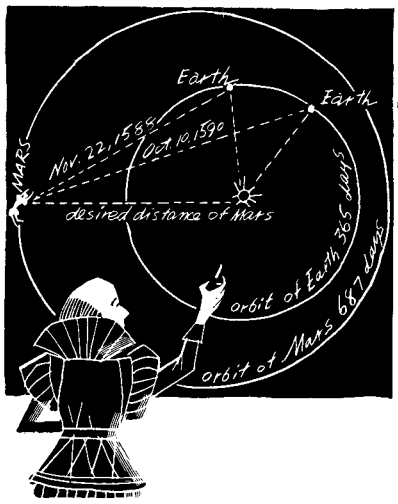

After discovering true planetary orbits . . .

. . . Kepler wrote of an allegorical summons to spirits from the moon . . .

—Sketches by Doug Anderson.

. . . and the supposed summoner, Kepler's mother, was carried from home in a box at night to face trial and threat of torture on charges of practising witchcraft.

would be required of cosmonauts in the twentieth century, these opening remarks by Kepler's moon specialist are impressive. The perception behind them is revealed more fully in the *Daemon's* statement that "No Germans are suitable" (explained in the footnotes as a stricture against Kepler's gluttonous countrymen) and "We do not despise the lean, hard bodies of Spaniards" (identified in the footnotes as a compliment both to Spanish frugality and to the Spanish genius for exploring on the basis of astronomical principles—as exemplified by Columbus's westward voyage to reach the Orient). The fateful words which Kepler blamed for the witchcraft trial of his mother—"Especially suited are dried up old crones, in tattered garments, who since childhood have ridden over great stretches of the earth at night on goats or broomsticks"—appeared in the original manuscript at this point, but the footnotes say even they were intended as jocular confirmation of Kepler's belief that "even this will perhaps be possible, that somebody might be separated from the earth and carried to the moon."

Having established personnel priorities for the moon voyage, Kepler's lunar specialist turned to examination of the physical obstacles lying between earth and the moon. First of these was the radiation showered into interplanetary space by the sun. "The conditions of the journey are such that . . . we cannot depart until the eastern edge of the moon begins to go into eclipse," the *Daemon* explained. "If the moon should shine forth full again while we were still en route, our voyage would be beset with very great troubles." The footnotes show us these steps in Kepler's analysis of this problem:

(1) After being filtered by earth's atmosphere, "Sometimes in the summer there is such intense heat from the rays of the sun that forests and wooden buildings catch fire spontaneously."

(2) Experiments with "a glass ball full of water" had demonstrated that "the ball transmits the rays of the sun and concentrates them to such a degree that they burn clothing and ignite dust."

(3) Even after the sun's rays are reflected from the moon through earth's atmosphere onto the earth, there is warmth in the seeming cool of the silvery glow, which "we can put . . . to proof by touch."

Kepler must have made this last observation before 1609 because the conclusion is implicit in his original text, which he never recast; in the footnotes he tells of a later experience: "If you catch the rays of the full moon with a concave parabolic mirror, or even with a spherical one, you will feel at the point of focus, where the rays come together, a certain warm exhalation as it were. This happened to me at Linz, when I was concentrating on other experiments with mirrors and was not thinking about the heat of light. I began to look around to see who was breathing on my hand."

(4) The atmospheric filter "terminates at the peaks of the mountains or even lower down." Above that height, the effects of the sun would multiply ferociously.

From the above progression it was logical to postulate the rapid disintegration of man should he be subject to solar bombardment outside the atmospheric blanket protecting earth. And the *Daemon* in Kepler's "lunar geography" implied the postulation in prescribing behavior for lunar voyagers after they reach the moon:

"There we betake ourselves hurriedly to caves and to shadowy regions in order that the sun, coming out into the open a little later, might not overwhelm us. . . . Whatever clings to the surface is boiled out by the sun."

The moon voyagers would have to be protected from the sun, then, throughout the trip. Kepler proposed to solve the shielding problem by using the shadow thrown by the earth as the earth passed around the sun. If the departure time were fixed to coincide with the moment when the sun stood behind the earth directly opposite the port of embarkation, there would be a tapering cone of darkness like a tunnel sweeping the sky. In this tunnel, Kepler reasoned, the travelers would be safe. His thinking has been confirmed by modern space probe observations: More than ninety-nine per cent of the sun's radiation is cut off by the earth's shadow beyond the range of the scattering effect of earth's atmosphere.

Now Kepler understood that because the moon and the earth both were in motion, the shortest route to the moon would not be a straight line between

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the moon and the earth but a line from the earth to a point in space at which the moon and the voyagers would arrive simultaneously. Either of two courses could be adopted to take advantage of this circumstance.

One was that the voyagers "must . . . circulate aloft for several days in the cone of the earth's shadow in order that . . . [they] be on hand at the moment of the moon's entry into this shadow." However, Kepler saw that such an arrangement might be "very unsuitable and contrary to the nature of the body." There were not only obstacles of physical conveyance to consider but a question of emotional tolerance; as Kepler put it in a footnote: "the mind of those being transported."

AFTER pondering the problem, Kepler chose the second of his two alternatives: "The whole trip from the earth to the moon must be made in that very short time in which the moon is in the cone of the shadow" of the earth during a lunar eclipse. The longest duration of an eclipse is four and a half hours. The lunar specialist in Kepler's allegory stated the solution: "The whole journey [between the earth and moon] is accomplished in the space of four hours."

"On such a headlong dash," the allegorical *Daemon* went on, "we can take few companions—only those who are most respectful of us." Kepler's footnote to this passage identifies the "most respectful" few as "philosophers" with staunch faith in the predictive power of scientific theory. "We congregate in force and seize a man of this sort; all together lifting him from beneath, we carry him aloft."

Nowadays we think of flying as a twentieth century concept. Actually, crude experiments in human flight began 1,000 years ago. There was much talk of flying during Kepler's lifetime, and one of the centers of it was his alma mater, Tubingen University. Among the books cited in Kepler's footnotes to the "lunar geography" is Della Porta's "Natural Magick," which described possible methods by which men might propel themselves on artificial bird-like wings. But Kepler knew very well that men would never flap their way through earth's atmosphere.

Although he told how the propulsive forces would operate, Kepler in the allegory never said what form the propulsion would take. Everything was stated in terms of action by the *Daemon*, the specialist in moon knowledge. All was theory—pure science. The technology was left to be developed by the spirit of learning.

Kepler's footnote regarding takeoff on the moon voyage reveals that the Imperial Mathematician had constructed a mental model of gravitation and had reasoned out its physical effects.

"I define gravity as a power similar to magnetic power—a mutual attraction," the note says. "The attractive power is greater in the case of two bodies near to each other than it is in the case of bodies that are far apart. Therefore, bodies more strongly resist separation one from the other when they are still close together."

The weight of gravity also grows with the mass of the body moving against the gravitational restraint, a companion footnote adds. A ball of lead is harder to move than a ball of stone "because there is more weight in the former, hence more resistance." Since the bodies [of the moon voyagers "are heavy, and resist motion . . . a quick . . . violent . . . push" is prescribed in a further footnote as the only means of breaking free of gravity's grip.

"He [the voyager] is twisted and turned just as if, shot by a cannon, he were sailing over mountains and seas," the allegorical *Daemon* reported. "The first getting into motion is very hard on him. . . . Therefore . . . he must be spread out, limb by limb, so that the shock will be distributed over the individual members, lest the upper part of his body be carried away from the lower part, or his head be torn from his shoulders."

How this careful arrangement was going to be maintained throughout the voyage was not clear to Kepler. As a theorist, he was unconcerned with technology and entered into no speculations that might have led him to such things as the form-fitting couch occupied by Yuri Gagarin and successor cosmonauts of the twentieth century. In a footnote, Kepler says simply that "someone" else would have to "care for the safety of the traveler" in this regard. The allegorical *Deamon* prescribed "narcotics and opiates."

Having already intimated that by the time a real voyage to the moon was made the trip would probably encompass several days, and having explained that the timetable for his dream-trip was arbitrarily reduced to four hours because the spirit of knowledge could not at the moment advise another way of keeping the travelers from being shriveled by the sun, Kepler used his four-hour schedule and his estimated distance to the moon (50,000 German miles) to further dramatize the rigors of take-off. In a footnote, he urges his readers to imagine the jolt that would be felt by someone who left the ground at a speed of 12,000 miles per hour.

In yet another footnote, Kepler makes clear his understanding of gravitation

—*Doug Anderson.*

. . . "we carry him aloft."

as a universal force, operating beyond the earth as well as on it. He reiterates an earlier published conclusion that the pull of lunar gravity is responsible for the rise of tides in earth's surface waters. If the moon thus affects waters *in the oceans of the earth*, a similar influence would certainly operate on bodies *suspended between the earth and the moon*. It follows that if propulsive forces "are imagined to snatch a body aloft toward the vortex of the cone [of earth's shadow] . . . they alone, with no help, will labor and sweat and grow faint. But if they undertake the task when the moon is right, the moon, present in the shadow, will aid them . . . by the magnetic attraction of her . . . body."

This is an accurate statement of modern orbital theory insofar as it makes clear the necessity of calculating opposing gravitational pulls of the earth and the moon. Furthermore, the description of a "labor and sweat" process is a vivid image of what happens to interplanetary vessels as they leave earth and struggle against the restraint of earth's gravity. The ships go slower and slower as the distance from earth grows until finally, as escape is accomplished, they "grow faint."

En route to the moon, the allegorical *Daemon* noted, the voyagers encountered "a new difficulty: terrific cold and difficulty in breathing."

In dealing with the cold, Kepler explicitly defined the nature of the manuscript he was writing. The cold "we counter with our innate strength," the *Daemon* declared. That this power could be only the human imagination becomes plain in a footnote which

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adds: the "burning passion" of the lunar specialist for "speculation . . . supplies the necessities of life." To paraphrase less cryptically: When the demand would become sufficiently great, knowledge would develop technological means of surmounting the scientific problems here being set forth.

The *Daemon* explained that the moon voyagers' breathing difficulties were offset "by means of moistened sponges applied to the nostrils." Was this perhaps a prediction of the oxygen mask as an artifact of high altitude travel? Hardly. Joseph Priestley would not identify oxygen until a century and a half had passed. Kepler was simply making the scientific observation that to reach the moon man would have to carry with him a means of breathing the vital element of life.

Again he had extrapolated from established fact. This time his thought experiment concerned the density of earth's atmosphere. Like other speculations before and since, Kepler's theoretical construct fell short of perfection. He supposed that the air did not extend very far past the tops of the highest mountains, if indeed it went that far. This, however, was a minor miscalculation alongside his recognition that the atmosphere thins with altitude, that finally the medium becomes too tenuous to retain any heat from sunlight passing through it, and that this thinness is "as fatal to men as lack of water is to fish."

FAR above the atmosphere, the *Daemon* disclosed a new phenomenon:

"When the first part of the trip is accomplished, the carrying [of the moon voyagers] becomes easier . . . we place the bodies on the empty air and withdraw our hands."

If we recognize the *Daemon* as the spirit of knowledge and accept the analogy that the hands of knowledge are technical instruments grafted upon scientific theory, we can read Kepler's meaning plainly: The moon travelers no longer needed to be propelled; they were able to float freely.

A footnote appended to the original manuscript at this point explains that the voyagers were suspended in a zone of equilibrium between the gravitational pulls of the earth and the moon "just as if being drawn in no direction at all." Here Kepler was describing what in modern terms would be called weightlessness — the effect of balanced forces that holds a body in orbit. Under these conditions, what remained of the original propulsive energy of takeoff was transferred to the bodies themselves, which reacted by "rolling themselves together into balls, as spiders do."

The lifting phase of the voyage had clearly ended, and the expedition now moved along "almost by means of a nod" until "finally, the corporeal mass heads of its own accord to the appointed place" in response to the pull of lunar gravity. "But this inclination is not very useful because it occurs too slowly," the *Daemon* explained, and a correction was made in the course of the voyage: "Therefore . . . we hurry the bodies along with a nod."

THAT one passage alone would have been enough to make Kepler's manuscript sound like a devilish piece of otherwordly plotting to superstitious German barbershop readers of the seventeenth century. What the *Daemon* described as happening simply couldn't have happened without unnatural intervention in the world most people of Kepler's day thought they lived in.

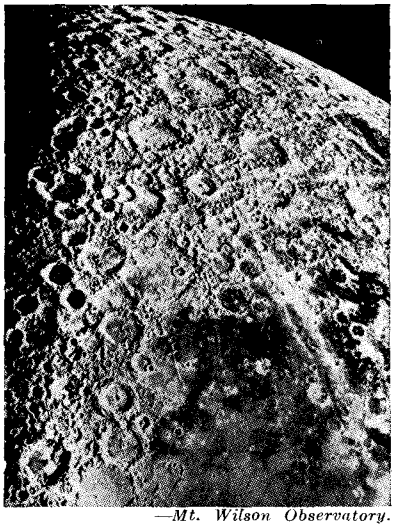
The bounds of that world and the laws ruling its natural events were set by Aristotle, as the church philosophers interpreted him. Aristotle had insisted that except for a slight impelling by the surrounding air, any moving object ceased to move immediately upon cessation of the force behind the object. Ordinary citizens had never heard of, and only the most adventuresome of scientists had paid serious attention to, a dissent to Aristotle's teaching that had been entered three centuries before Kepler, in Paris, by Jean Buridan. Buridan had pointed out that the air appeared to resist motion through it but that this resistance seemed to be overcome for a time varying in proportion to the relation between the weight of the object and the original impetus of the object.

Kepler was an omniverous reader, and may have read Buridan or read of him. Anyhow, Kepler went beyond Buridan's thinking in the "lunar geography" and came very close to if he did not actually arrive at Sir Isaac Newton's principle of inertia. Kepler used the word "inertia" in its modern sense in a "lunar geography" footnote, as follows: "For every body, by reason of its own mass, has a certain inertia in regard to motion which provides repose to the body whenever the body is placed in a position beyond powers of attraction. Whoever would move this body from its place must overcome this force, or rather, this inertia." Nowhere in the lunar allegory did he explicitly state that once a body is in motion it continues in motion in the direction of the force that moved it unless a change is impressed by intervening forces. But the *Daemon*'s description of a state of "being drawn in no direction at all" and of transference of a forward-driving energy to a ball-like whirling are strongly suggestive of rather complete understanding on Kepler's part of what are known today as the first two of Newton's three laws of motion—which Newton didn't write until half a century after Kepler's moon-dream was written.

And in choosing the word "nod" to characterize the gentle nature of the propelling force the *Daemon* employed in the final correction of the moon voyage course, Kepler unquestionably anticipated Newton's third law.

This law says that every action has an equal and opposite reaction. Newton stated the third law along with the first two. Fifty years beforehand, Kepler gave his *Daemon* power to "nod" moon travelers through the vacuum of interplanetary space (which he explicitly identified as a vacuum), where hardly more than a nod would be required (there would have to be something more, Kepler emphasized in a footnote) to provoke an equal and contrary push.

When Kepler's dream-expedition at last approached the moon at rapidly accelerating speed under the influence of lunar gravity, the *Daemon* had to "precede [the voyagers] . . . lest some damage by inflicted by a very hard impact on the moon." Did Kepler thus



—*Mt. Wilson Observatory.*

". . . lest some damage be inflicted . . ."

imply a braking rocket? No more than he provided a rocketship for the takeoff. Once again leaving the development of technology to the spirit of learning, Kepler merely dramatized the necessity of slowing the moon landing if man was to arrive on the moon unhurt. At the end of the voyage he sidestepped description of the landing by having the *Daemon* say "when we disembark as it were."

Having drugged his voyagers immediately before their departure from earth, Kepler had to waken them upon arrival at the moon. "They usually complain about the unspeakable weari-

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ness of all their limbs," the *Daemon* reported, but "as they walk around, they recover from this."

Seen in hindsight from the twentieth century, Kepler's theoretical guidance of an early seventeenth century lunar expedition across the physical obstructions that modern astronomers recognize as lying between the earth and the moon was an incredibly prescient exercise. Rarely have scientific problems of future generations been so faithfully set forth. But to Kepler all this was merely means to a larger end. His major purpose in writing the "lunar geography" was to demonstrate to his fellows that the human animal was not the central figure of the cosmos, that the heavens did not wait upon his home planet earth.

Kepler's life-long hero, Nicholaus Copernicus, had fallen considerably short of a convincing argument in composing his thesis that the earth moved around the sun. The heliocentric idea was not widely accepted in 1609, even amongst scholars. If the earth moved (so popular thinking ran) people surely would be thrown off into the air or thrown down upon the ground. However, anybody with eyes to see the sky could see that the moon moved. Therefore, Kepler reasoned that by taking people vicariously to the moon and standing them seemingly still there, he could show them the earth in motion.

He set the stage for this primary task as soon as his moon travelers were tucked away in places safe from the sun. His first piece of preparation was psychological: a new name for the earth. *Volva*, he called it, to designate the revolving planet.

ALTHOUGH he had given the moon a Hebrew name, *Levania*, early in the manuscript to heighten the mystical flavor of his allegory, Kepler in the scientific passages of his lunar treatise abandoned that name in favor of two other names for the moon's two halves: *Subvolva* for the hemisphere that always faces *Volva*, and *Privolva* for the hemisphere always deprived of the glorious sight of *Volva*.

These names could only be heard; the motion of *Volva* had to be witnesed. Kepler provided the visual effects by identifying *Volva's* geographical features, as these were discerned from *Subvolva*, in simple analogies to what earthlings see of lunar geography and how as "the face of the man in the moon." South America, for example, looked like a bell swinging from a rope. Europe appeared as a girl silhouetted in a flowing dress, about to kiss a lover, her arms outstretched behind her.

These images appeared to *Subvolva* in the same regular procession through-

—*Doug Anderson.*

". . . about to kiss a lover."

out the night. They served as substitutes for the hands of a clock in measuring intervals of time. One complete procession occupied twenty-four earthly hours. There were fifteen processions in one *Subvolvan* night.

Travelers in the *Subvolvan* hemisphere could also tell where they were on the moon by looking at *Volva*. *Volva* always hung over a given place at a fixed angle, as though nailed to the sky at that point: directly overhead here, close to the horizon there, to the right of this mountain, in the cleft of that valley.

The sunlight reflected from *Volva* was a glorious sight to *Subvolva* because of *Volva's* immense size—four times the breadth of the moon, fifteen times its reflecting surface. To those who saw it on the lunar horizon, *Volva* looked like a mountain on fire far away. The light itself was strong enough to be felt appreciably as heat; it moderated the chill of the *Subvolvan* night.

At intervals on *Subvolva*, a small black spot rimmed with red would be seen to cross the face of *Volva*. It traveled faster than the geographical markings that told the passage of time. This nimbler spot was the shadow of the moon eclipsing *Volva*.

At other times, the face of the sun would be eclipsed by *Volva*. On some of these occasions, *Volva* would momentarily acquire a luminous halo. On other occasions, the sun's light would be utterly extinguished and *Subvolva* would be plunged into Stygian dark.

The rare total eclipses were the only periods when *Subvolva* was without some degree of illumination from *Volva*. Even in the *Subvolvan* day, when the sun dominated the sky, *Volva* was visible because of its size, although it waxed and waned as the moon does to watchers on earth.

Never able to see *Volva*, the *Privolvan* hemisphere had no light at night except that of the stars and of the planets other than earth. Sometimes Mars would blaze up twice as big as earth ever sees it. Otherwise, the *Privolvan* night was an abysmally dark and gloomy period lasting the length of fifteen days and fifteen nights on earth. This was the duration of time which Kepler, as a terrestrial astronomer, knew the *Subvolvan* half of the moon to be steadily reflecting the light of the sun toward earth. Since *Privolva* faced the other way, it had to look into a sky bereft of sunlight throughout those two earthly weeks. The *Privolvan* weather during that time was bitter cold, with icy winds. During the following two weeks the pitiless glare of a great, slow-moving sun baked the hemisphere in heat fifteen times as intense as that of the Sahara desert.

What *Privolva* looked like, Kepler had no way of knowing. But he assumed the terrain must be wild because of the extremes of temperature to which it was subject. The surface of *Subvolva* he had studied intensively for years; from the shadow studies Professor Maestlin had taught him to make, he was confident it "has very high mountains and very deep and broad valleys; thus falling far short of earth in perfect roundness; and the whole of it is porous, as though dug through with hollows and continuous caves."

No explanation of the Maestlin shadow study technique is to be found in the text of the "geography." But there is a footnote in which Kepler describes the sort of simple procedure that would have sufficed. He projected the image of the 1612 eclipse of the sun through a double-lensed telescope onto a simple tablet of white paper. On the paper, it was possible to follow the globe of the moon as it passed across the sun's face. On the advancing edge of the lunar disc, two small bumps were noticeable. These were watched until it could be ascertained with certainty that they moved at the same speed as the moon's movement. Thus the bumps were established as promontories on the moons' surface Their height was estimated by comparing the breadth of their shadow to the breadth of the whole moon's shadow. The resulting altitudes were considerably above those of earthly mountains.

IN the midst of an otherwise meticulously documented description of the moon's geographical features, Kepler committed what most but not all modern scientists would call a spectacular mistake. He covered large parts of the lunar surface with seas comparable to the oceans of earth. Then he employed this erroneous conception as a spring-

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board to jump to the loftiest peak of insight in his brilliant life.

During the *Subvolvan* day, Kepler's allegorical *Daemon* pointed out, the sun and *Volva* are both visible in the sky. Their gravitational attractions "in combination lure all the water to that hemisphere and the land is submerged so that very little stands up above the water, while the Privolvan hemisphere is dry and cold because all the water has been drawn away from it. But when night approaches on Subvolva and day comes to Privolva, the heavenly bodies (sun and Volva) are divided between the hemispheres and so also is the water; the fields of Subvolva are laid bare, while moisture is provided to Privolva as a slight compensation for the heat."

HERE, very clearly, is an almost complete dramatization of the universal law of gravitation, the formulation of which historians attribute to Sir Isaac Newton. The gist of the law, as Newton phrased it, was the proportion between the mass of the body and the power of the body's gravitational attraction (earth and the falling apple; earth and the hovering moon). Newton's formulation is dated variously from 1666 to 1686. In the opening decade of that century we find in Kepler's "lunar geography" first the pull of the moon drawing the waters of earth upwards to create tides, then the combined pull of the earth and the sun on the waters of the moon engulfing a whole lunar hemisphere, and finally the pull of the earth alone, counter to the pull of the larger but more distant sun, removing the water from the moon's flooded half. These surely are expressions of Newton's proportional thesis in action between two and three generations before Newton.

Since the primary purpose of the geography of the moon was to enable humans to stand on the moon and witness the turning of the earth, the moon had to be in some manner livable. Kepler therefore populated it with creatures in thick, porous, husk-like skins of a sort that astronomers now would agree to be necessary to prevent death from evaporation in the near-vacuum of the lunar atmosphere. He gave the bodies of the moon-dwellers aquatic and serpentine forms appropriate to survival in a subterranean world of watery caves.

Adaptation of species, we see from this passage, seemed as logical to Kepler as it did to Charles Darwin several hundreds of years later when Darwin began to put together his theory of evolution. In a footnote elucidating his thoughts on the question, Kepler draws the even more modern conclusion that life is governed by fixed cycles and rhythms.

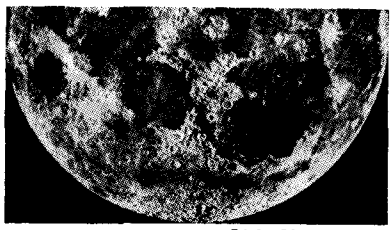
"Just as there is a relation between the very slow motion of the fixed stars for us here on earth to the brief periods of the planets and to the daily rotation of the earth itself, so it seemed to me there was a relation between the length of human life and the moderate size of the human body," this footnote says. "Therefore, since on the moon the fixed stars return more quickly than Saturn, and since the day is thirty times longer than ours, I thought that I should ascribe to lunar creatures a short life and a fast rate of growth."

Almost as an afterthought comes realization that in giving command of speech to his specialist on moon voyaging, the *Daemon*, Kepler anticipated artificial reproduction of the human voice. "I do not consider it impossible," the appropriate footnote says, "to produce both vowels and consonants in imitation of the human voice by means of various instruments."

Such was the astonishing seeing power of the lenses of Kepler's mind. It seems to me that his "lunar geography" ought to be within easy reach of modern schoolchildren. It ranks alone as a feat of scientific imagination.

—JOHN LEAR,
Science Editor

The Pursuit of a Dream



—Lick Observatory.

THE little book which John Kepler called "lunar-geography" appeared for the first time in print under the title, "Dream," and was subtitled "Astronomy of the Moon." Originally conceived as theses for student debate at Tubingen University in 1593, written as an allegory in 1609, footnoted between 1620 and 1630, and started onto the press by Kepler shortly before his death in 1630, the "Dream" was finally published in 1634, in Latin. Another Latin edition appeared in 1870 in Volume VIII of Christian Frisch's set of Kepler's collected works, and a German paraphrase was printed by Ludwig Gunther in 1898 under the title, "Kepler's Traum von Mond." Frisch and Gunther both understood that the "Dream" was scientifically significant, and said so in their respective publications. But neither of them took the pains to analyze the allegorical research report.

The hiatus in appreciation of Kepler's neglected masterpiece has continued to the present day. Columbia University English Professor Marjorie Nicholson published a few scraps of the "Dream" in tracing the manuscript's travels as she imagined them in "Roots of Scientific Thought." At her instigation one of her students, Joesph Keith Lane, did a rough translation of the entire work from the original Latin into English as a master's thesis, which is on file among unpublished manuscripts in the Columbia University library. A truncated English version of the "Dream" was published, as though it were fiction, in "Beyond Time and Space," a science fiction anthology. Willy Ley devoted a few paragraphs to the "Dream" in his "Rockets, Missiles and Space Travel." Arthur Koestler gave the "Dream" a few pages of "The Sleepwalkers" and "The Watershed." Brief mention of the "Dream" was also included in the German original of the late Max Caspar's "Kepler" and in Dr. Doris Hellman's translation of that definitive biography. But in none of these works was there a clear-cut exposition of Kepler's method or a critical statement of his conclusions.

I set out to provide the missing documentary in 1957, the year of Sputnik I. Upon reading a mention of the "Dream" in Rudolf Thiel's book, "And There Was Light," I assumed the Kepler manuscript to be readily available in English. I walked the few blocks from the *Saturday Review* office to the main reading room of the New York Public Library to borrow a copy. Only the Latin and German editions were available. So I paid library staff members by the hour to read to me from the Latin and German during lunch periods and at night. The more I heard, the more thoroughly I became convinced that I was listening to an incredibly prescient and logically reasoned scientific report. Finally, I persuaded Mrs. Patricia Kirkwood, wife of Cornell University Professor Gordon Kirkwood, to do a full English translation of the "Dream" for me. The report in adjacent columns is based on her text. —J.L.

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PERSONALITY PORTRAIT—LXXXV

LIFE IN HELL'S VESTIBULE

Kepler's Ingenious Biography

IN his allegorical report on moon voyaging, the great seventeenth century German mathematician, John Kepler, hid one of the most ingenious autobiographies ever written.

The allegory began with the pretense that its writer was dreaming, and that in the dream he was reading a book. The main character in the book then spoke up, as follows:

"My name is Duracotas. My home is Iceland, which the ancients called Thule. I am free to write because of the recent death of my mother Fiolxhildis, who earnestly entreated me to remain silent while she lived. She said there are many wicked folk who despise the arts, and maliciously intepret everything their own dull minds cannot grasp. They fasten harmful laws onto the human race; and many, condemned by those laws, have been swallowed by the abysses of Hekla. My mother never told me my father's name, but she said he was a fisherman and that he died at the very old age at 150 (when I was three) after about seventy years of marriage.

"In my early childhood, my mother would lead me by the hand or lift me onto her shoulders and carry me to Hekla's lower slopes. Often these excursions were made around the feast of St. John, when the sun, occupying the sky for the whole twenty-four hours, leaves no room for night. Gathering various herbs there, she took them home and brewed them with elaborate ceremonies, stuffing them afterwards into little leather pouches which she blew up and sold as charms to sailors on ships in the nearby harbor. In this way, she made a living."

Now Hekla was an Icelandic volcano. But its real function in the allegory was to suggest an earthly gateway to purgatory, which Plutarch had suggested might be on the moon. What Kepler was really saying in this veiled fashion was that many churchmen of his time would consign him to hellfire for believing that the earth moved as the heavenly bodies did and that they shared its imperfections. And one of the several incredible heroisms of Kepler's life was his resistance to both Lutheran and Catholic pressure to conform to religious dogma.

So much for the setting of the allegory. What about the characters in it?

John Kepler's mother, Katharina, was an herb doctor. If she was the real person represented by the allegorical Fiolxhildis, then Duracotas must have been Kepler himself. Perhaps we can confirm this by trying another clue. Was Katharina Kepler's husband an old man at the time John Kepler was born?

No. The allegorical fisherman who sired a son at the age of 147 years was a typical Kepler joke, to be laughed at and forgotten. However, Katharina Kepler had plenty of reason to prefer to keep her husband's name to herself. Heinrich Kepler, John's father, was a mercenary soldier who began by deserting his wife and children for the excitement of battle and ended by accepting Catholic pay to join in slaughter of his fellow Protestants in the lowlands of Europe.

If we read subsequent passages in Kepler's allegory in the light of the foregoing information, they unfold the story of Kepler's life in quaint episodes. In the pretended book in the pretended dream, the allegorical Duracotas goes on to say:

"Once, out of curiosity, I cut open a pouch that my mother had already sold, and the herbs and patches of embroidered cloth she had put inside it scattered all about. Angry with me for cheating her out of her pay, she gave me to the captain in place of the little pouch so that she might keep the money."

Nothing quite so barbarous as that happened to John Kepler as a boy. But his mother did have a hard time making ends meet in her husband's absence, and she nagged her son to get out into the workaday world instead of spending his time unprofitably stuffing his head with book learning. Had young John's health been sturdier, he might very well have spent his adult life as a tavern barkeep. Instead, his frailty and quick wit encouraged his grandfather, burgomaster of the Free City of Weil, to get the lad a fellowship to prepare for the Lutheran clergy at Tubingen University.

According to Duracotas, the allegorical ship captain who acquired the boy as a forfeit for the good luck charm, "setting out unexpectedly next day, headed for Bergen in Norway, with a following wind.

"After several days, a north wind came up; blown off course, he crossed the strait between Norway and England and headed for Denmark, since he had letters from the Bishop of Iceland for Tycho Brahe, who was living on the island of Hven. I became violently seasick from the motion and the unusual warmth of the breeze, for I was in fact a youth of only fourteen. After the boat reached shore, the captain left me and the letters with an island fisherman . . ."

Since John Kepler had never been sold to a shipmaster, he plainly could not have undertaken the voyage just described. But Kepler had left his mother for distant parts while in his teens, going first to Tubingen University (where, against the prejudice of the faculty as a whole, he learned the new sun-centered astronomy of Nicolaus Copernicus from Professor Michael Maestlin) and then moving on to a teaching post at Graz after the Lutheran powers-that-were decided he protested too much to be a dependable preacher of the Protestant faith; from Graz an unexpected shift in the winds of fortune (sudden closing of the

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school at Graz by the accession of Catholics to authority there) drove him to the protecting arms of Brahe, the fabulously accurate Danish astronomer.

Kepler never actually visited Hven. Brahe had fallen out with his Danish royal patrons, had left Hven and was in Prague serving the Hapsburg Emperor Rudolph II as Imperial Mathematician when Kepler joined him in the year 1600. Mutual respect between the two scientists had been established years before, following publication of Kepler's first book, "The Cosmic Mystery." From the beginning, Brahe accepted Kepler as a research partner, under contract.

Upon Brahe's death in 1601, Kepler succeeded to the title of Imperial Mathematician under the reigning Hapsburg and inherited Brahe's observations of the oppositions of planet Mars during the years 1580 to 1600. It was through mathematical analysis of those observations that Kepler finally reached the conclusion that the orbits of the planets must be ellipses and not circles. The planet motion laws he derived from this conclusion were published in 1609, the same year in which Kepler wrote the "Dream."

So, in the end, after having given misleading data on almost all the major details, Duracotas revealed himself to be an authentic mirror image of Kepler in these allusions:

"The astronomical exercises" of Tycho Brahe "pleased me greatly" and "prepared the way for me to greater things."

The allegorical Duracotas also faithfully reflected the real Kepler when he declared, "After I had passed several years [with Brahe] . . . I was seized with a desire to see my home again." For Kepler was dreadfully homesick in Prague. He tried repeatedly to return to Tubingen University as a faculty member. But the stiff-necked Lutherans there wouldn't have him. In this respect, Duracotas did allegorically what Kepler longed to do but could not:

"After obtaining my patron's approval for my departure, I left him and went to Copenhagen. There some travelers who wanted to learn the language and the region took me into their company; with them I returned to my native land five years after I had left it."*

In the deepest sense, then, Kepler's lunar allegory really was a dream, in which he re-lived the triumphs of his life and blotted out the heartbreaks.

—J.L.

*(*All quotations are from Mrs. Patricia Kirkwood's English translation of the Latin original of Kepler's "Dream.")*

THE BRAIN MINES OF TOMORROW

America's Future Resource Awaits Tapping

By J. HERBERT HOLLOMON

IT is a strange paradox that, although the human intellect has been capable of great achievements in science and its pursuit, the translation of science to use by society is not well understood. Indeed, the glittering successes of science have dimmed our perception of the details of the complex process by which man's understanding of the universe finally enters the world of industry and commerce. That there is misunderstanding is clear from the frequent claims that the large research and development expenditures and the large commitment to science in our country lead inevitably to national prosperity and well-being.

It is often assumed that the spectacular results of atomic energy (which have so radically changed concepts of national defense), the transistor (which led to miniaturization and the reliability so important to space vehicles), and radar (so crucial to modern travel) have made substantial contributions to our economy. Actually, their contribution to gross national product has been small, and they have not as yet made substantial contributions to an increased efficiency in the use of capital and of labor.

The enormous increases in funds for science and for the development of technology have not in fact been followed by a corresponding increase in the rate of growth of our economy. Indeed, nearly the reverse has been true.

In the period 1947 to 1954, the average annual rate of growth was 3.7 percent. From 1954 to 1960, the average rate dropped to 3 percent. This occurred during the period when our expenditures for research and development (hereafter referred to as R&D) tripled and the percentage of our gross national product spent for R&D doubled (rising from 1.4 to 2.8 percent).

During this time, there were loud and insistent claims of the great social benefits that were to come from this large commitment to science.

Now a myth sometimes can lead people to great destinies if it embodies a fundamental truth. Unfortunately, the prevalent myth regarding the use of science by society has no such truth in it. This myth says that science converts itself into social values through some magic. Actually, there is no magic; there is not even an automatic quality to the process. The activity which puts science to use to meet society's needs requires a special environment of its own, not entirely but very largely independent of the environment of science. And there must be people with a special education and a particular outlook, and institutions which encourage invention, innovation, and the diffusion of technology.

Science, in its continuing search for understanding of man's surroundings, does create endless new opportunities for society's possible enjoyment. But only a few of this vast number of discoveries can be fitted into man's customs and habits at any one time.

To be accepted by the culture which produces it, a scientific innovation must first fill a need. Will it feed man's hunger, shelter him, carry him from place to place, enable him to communicate more fully with his fellows, amuse him, provoke within him a sense of beauty?

If there is an affirmative answer to the question above, society next must decide whether the new idea dangling before it is *worth* whatever the cost may be. And if that decision is affirmative, then individual members of the society must decide whether, being able to afford the new idea, they are *willing* to pay for it.

Even after a market has been established for a new product the manufacturer of the product must work continually to reduce costs and thus to multiply sales. The key man in the total process is more likely to be the production manager on the factory floor than the scientist in a laboratory.

The foregoing truths are deeply embedded in the great past of the American people. By following them for two centuries we became known for our practicality and pragmatism. Now we are in danger of over-reacting.

Not only are we neglecting the pragmatic aspects of society but we teach our best students to look down upon

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practical or useful activities as being intellectually demeaning or inferior.

This pernicious attitude is reflected in the direction of our present scientific research. Very little of the enormous expenditures for R&D has gone toward increase of industrial productivity or toward innovation in civilian technology, both of which are so important in increasing our rate of economic growth or in improving the variety of our society.

Of the annual R&D expenditure of 2.8 percent of our gross national product, about 2 percent is spent for space, defense, and atomic purposes, with only 0.8 percent for all other purposes. Other major industrial countries, such as Japan, West Germany, the Netherlands, and Sweden, spend an average of about 1.25 percent of their gross national product for R&D, little of it aimed at military or space objectives.

In terms of manpower, 0.4 percent of the West German labor force are scientists and engineers devoted directly to activities that either relate to science itself or are pertinent to the development of industry and commerce. The comparable figure for the United States is 0.2 percent.

WHILE it is evident that economic growth depends upon many factors other than research and development, during recent times the rate of growth of almost all the industrial nations of the world exceeded our own. For example, the Soviet gross national product per man-year in this decade is expected to grow at 4 percent per year, almost double ours. This gives cause for serious concern about the effectiveness of the use of science and of the resources we apply to the development of civilian technology.

Of the 1,400,000 scientists and engineers in America, 400,000 are doing research and development, most of them (280,000) on government-sponsored projects such as space and defense. The remaining 120,000 work in industry for civilian objectives.

The 1963 increase in the supply of scientists and engineers engaged in research and development is expected to be almost 30,000. But the increase in support for research and development for space alone will require about the same number.

Probably the greatest recent impact of technology on our economy has come from the increase in agricultural productivity. Certainly the most fundamental change in the character of our society in the last five decades has been the change from an agricultural to an industrial economy—from a rural to an urban society. The rise in agricultural productivity provided the increased income to allow the purchase of products and services other than those which fulfill simple necessities.

Unlike the diffusion of agricultural technology, which was effectively accomplished by land-grant colleges and extension services, there is no special mechanism of assuring the diffusion of technology to the 3,300,000 industrial and commercial firms in America, even though there are almost as many individual companies as there are farms.

This problem of diffusion is critical to our effective use of science and to the growth of the economy. Of the 300,000 manufacturing companies in the United States, about 300 perform 80 percent of industrially sponsored research and development. The same 300 companies account for 60 percent of the sales of all manufacturing companies and 61 percent of total manufacturing employment. They also spend about 2.75 percent of their sales on research and development, while the remainder of the 300,000 spend 0.9 percent, about one-fifth as much. This disparity reduces the ability of the smaller enterprises to compete in the world economy.

Historically, the United States government always has been interested in furtherance of technology. Broad provision for action in this direction was written into the eighth section of the first article of the Constitution. An early example of Federal approach to the problem was the U. S. Bureau of Mines, which came into being during the early period of our country's expansion, when exploitation of natural riches was a principal means of economic strength and growth. Our reservoir of natural resources is still fabulous, but we can no longer depend on it alone. Our prosperity tomorrow will depend on how effectively we can mine our brains. And the U. S. Department of Commerce proposes to prepare for extraction of these intellectual resources through a new program quite different from anything in the past.

—*Physics Today.*

DR. J. HERBERT HOLLOMON quit a $75,000-a-year job with General Electric to become the U. S. Commerce Department's first Assistant Secretary for Science and Technology. Recently he described his new program for civilian technology in a speech to scientists. *Physics Today*, a journal of the American Institute of Physics, published the text of the speech, and the message reproduced here was adapted from that text.

THE next era of entrepreneurs will be dominated by men who know how to make practical use of scientific discoveries. The prototypes are already on the scene: Land, the Varian brothers, Beckman, Ramo, Morse. The new tradition of banking-on-science is being laid down simultaneously by John Rockefeller's grandsons and by the Mellons.

To initiate its new program in support of civilian technology, the Commerce Department has asked the Congress for $1,250,000 for the remainder of the fiscal year which ends with June 1963, and $7,400,000 more for the fiscal year 1963-64. With these monies we intend to encourage ten to a dozen universities to undertake pilot experiments in industrial extension work roughly following the successful pattern of the U. S. Agriculture Extension Service, so that the benefits which scientific research has already brought to the American farmer can also be given to the American factory worker. The appropriations referred to above also will enable us to stimulate in the universities technical research basic to particular industries where the opportunity is large and present technological research small, or where export-import trade is appreciably influenced, or where the industry's output represents a significant segment of the gross national product. Our prospective starting points are the textile mills, the building and construction trades, machine tool makers, and foundries.

We can afford to maintain a strong military posture and carry on interplanetary space exploration only if we have a healthy economy to build on and if we are satisfying the elementary needs of our society. As Francis Bacon has said, "The true and lawful goal of science is that human life can be endowed with new powers and inventions." If the economy is not healthy, science itself cannot be healthy. If science claims too much or is misused, it may not be able to demand the conditions of free inquiry and healthy support that it needs.

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SCIENCE IN BOOKS

WHY IS MAN?

Evolution's Unsolved Puzzle

MUCH as we may know about the "how" of human evolution, the "why" is still a great puzzle. High intelligence and harmonious social integration are undoubtedly attributes of high selective value, so much so, indeed, that we may ask with W. Etkin (1954) "why all animals are not as intelligent as Einstein and as moral as Albert Schweitzer?" What has enabled man to break the chains of his animal heritage and to evolve from a primate to his present level? The crucial stages of this development took place in the past and like all historical events can never be tested experimentally. However, as G. A. Bartholomew, Jr., and J. B. Birdsell (1953), Etkin (1954), and others have pointed out, an analysis of the ecological conditions under which primitive hominids lived and of their social and population structure permits the reconstruction of a fairly realistic model of the crucial selection pressures.

The most astounding phenomenon of human evolution is the rapid increase in brain size during the Pleistocene. Hominid evolution up to and including the *Australopithecus* stage is characterized by a shift into the terrestrial niche, the assumption of upright posture, the freeing of the hand for manipulation, and the increasing use and manufacture of tools. Man's ancestor was a highly vulnerable creature at this stage, since its locomotion was none too efficient and its niche none too hospitable. What the original hominids lacked in speed, in natural weapons, in nocturnal secretiveness, and in arboreal safety they had to counterbalance by the development of the various facilities now considered peculiarly human. These include the widespread use of tools, the use or manufacture of devices for protection against the inclemency of the weather, and particularly vocal communication (speech). Mortality from enemies, famine, exposure, and intraspecific strife must have been high. The premium on the ability to cope with these difficulties must have been correspondingly high.

There are two biological factors that may have facilitated this development. One is the population structure of primitive hominids. They faced their adverse environment not as individuals but as family groups or small bands. The unit of evolution was not the individual but the population. As soon as this is appreciated it becomes apparent that the description of natural selection so prevalent in popular writings and among post-Darwinian philosophers and sociologists is not correct. To describe natural selection in terms of brute force—"nature red in tooth and claw" and "survival of the fittest"—places a misleading emphasis on only a single aspect of natural selection. Inventiveness, foresight, leadership, and, in many cases, cooperation, far more than brute force, will be favored by natural selection in an animal with the social population structure of the primitive hominids, as indeed was already pointed out by Darwin himself. As Julian Huxley has demonstrated so convincingly, there is no conflict between natural selection and human ethics. He who makes the greatest contribution to the harmony and well-being of the group may thereby become the ancestor of the greatest number of surviving descendants. "Ethical" qualities, in a social organism are apt to be important components of fitness.

POLYGYNY is more or less developed in nearly all anthropoid apes. There are good reasons for postulating that it was characteristic of the primitive hominids. It may still be an original condition in a few living primitive tribes. Most cases of polygyny among contemporary peoples were, however, secondarily derived from a preceding monogamy. What effect on evolutionary rate would polygyny have? If the leader of a group has several wives (perhaps even all the mature females of the family group), he will contribute a far greater than average share to the genetic composition of the next generation of his group. Such tremendous reproductive advantage of a leader in a self-contained family group or tribe would favor the very characteristics that have made man what he is. There are inherent dangers of mere "reproductive success" if it does not add to the adaptedness of the population. However, the condition described for primitive hominids is completely different from the situation in birds of paradise or other organisms in which the favored male does not contribute in any manner to the survival of his offspring. Reproductive advantage in the primitive hominid society, we may speculate, was not a matter of any bizarre secondary sex characters, but one of social position within the group which depended on definite qualities, physical as well as mental. These in turn depended to a considerable extent on the genetic endowment of the individual. In this case, then, reproductive advantage results in a maximal contribution to the fitness of the entire group.

THE second biological factor responsible for the acceleration of hominid evolution is parental care. Much of the mortality in animals, particularly at the immature level, is accidental and haphazard. When 95 or 99 percent of the zygotes are killed by such accidents as are caused by weather or indiscriminate predators (such as a whale straining out planktonic larvae), it leads to a considerable reduction in the efficiency of selection. The institution of parental care permits a marked decrease in such random mortality. Survival now depends increasingly on the goodness of the care bestowed upon the child by the parents. The high selection pressure in favor of brain development in such a breeding system is obvious. It is reinforced by an interesting feedback. The increase in brain size results in a slowing down of the development of the human infant and a lengthening of the period during which parental care is required. This, again, increases the selective value of parental care and once more exerts a selection pressure in favor of increased brain size in the parents.

This mutual reinforcement of selection pressures can account quite efficiently for the rapid increase of brain size in the hominids but it does not tell us why this evolutionary trend came to such a sudden halt. There has been no increase in brain size since the time of Neanderthal (nearly 100,000 years ago!) To be sure, there may have been an improvement of the brain without an enlargement of the cranial capacity but there is no real evidence of this. Something must have happened to weaken the selection pressure drastically. We cannot escape the conclusion that man's evolution toward manness suddenly came to a halt. As evolutionists we must attempt to find the cause of this drastic reduction of the selective advantage of increased brain size after the *Homo sapiens* level had been reached.

—ERNST MAYR,
in "Animal Species and Evolution," (Copyright© 1963 by the President and Fellows of Harvard College; Belknap Press, $11.95)

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THE RESEARCH FRONTIER

—Duke.

WHERE IS SCIENCE TAKING US?

Outward to the space which separates the planets of the sun, and inward to secrets of human individuality that have been hidden since the time when man first remembered a sound. Of all the wonders that fall within this latter category, none is more memorable than memory itself. What is memory? Professor Philip Handler, chairman of the biochemistry department of Duke University in Durham, North Carolina, posed the question some months ago to members of the U. S. Congress, sitting as a subcommittee on Appropriations of the House of Representatives. What he said has been reverberating within science ever since. Recently SR's Science Editor asked for an opportunity to relay the message, and Professor Handler obliged with the brief statement reproduced in the space below. Experiments designed to open up the frontier of memory are now underway.

BY PHILIP HANDLER
Duke University

THE triumph of biochemistry, to date, has been to provide understanding of the life and times of a single cell. We know best those aspects of life which permit its very existence and, largely, are equally true of the cells of man and of bacteria. When such information is summed, one gets the impression of a "typical cell' although no such cell truly exists in nature.

The differentiated cells of the adult organism differ markedly among themselves; their structures permit them to function so as to serve the animal of which they are part in a unique way. Thus, muscle cells contract, red blood cells circulate carrying oxygen, kidney cells make possible the elaboration of urine, and nerve cells – which conduct an impulse down their fibers – are so organized as to permit memory, thought, love, hate, etc.

Although we understand, in a fundamental sense, how each of these cells lives, we are woefully ignorant of how they perform their special functions. This is one of the great problems for tomorrow. We do have excellent understanding of the mechanism by which the erythrocyte [red blood cell] utilizes its hemoglobin to carry oxygen. But how a muscle cell contracts or a kidney cell alters the composition of a fluid as the fluid flows by, how a nerve cell conducts – much less how it "thinks" or "remembers" – are relatively unknown.

In this regard, I might venture a small speculation. Perhaps because of the power of their electronic and electrical tools, our friends in neurophysiology have come to regard nerve cells as remarkable little electrical systems and believe that all of their properties can ultimately be explained in these terms. They regard the brain as a remarkably complex system of reverberating circuits and suggest that it is in altering these circuits that we remember or forget, love or hate, etc.

But there is a distinct possibility that memory, at least, will find its explanation at a molecular level.

What is memory?

We don't really know very much about it, except that it happens. Our brains somehow store information in such a way that we can recall it over and over again, and use it for whatever purposes seem useful to us at any given time. Apparently three different processes are involved in memory. They may be variations of one central process, but if this is true we haven't yet discovered even the first clue to the master device.

The first of the three processes is conduction of messages over nerve network into, through, and out of the brains. We know a good deal about this process, and we have broken our knowledge of the character of the messages down to the molecular level.

The second of the three processes in memory is the one which enables us to decide what to do with a message after it reaches the brain. We know almost nothing about how the decisions are made.

The third of the three processes associated with memory is the remembering itself. About this process we know nothing whatever.

If we wish to wriggle our toes, how do we call out of storage the particular message which our brain sends to our toes commanding: "wriggle"?

What is it that happens when we close our eyes and recall the fragrance of green fields we once passed long ago?

All such activity must have a molecular basis. For we are made of molecules and it is the behavior of the molecules of which it is composed which must define the ultimate basis for the function of the nervous system.

There are some of us who think that the time is ripe now to engage in this problem, that we now know enough about the nervous system so that we can now profitably begin to ask, "How do these cells perform their very special tasks? What is memory on a molecular basis, if there is indeed a molecular basis?"

This is, in part, the mind-body problem, which biologists like myself generally shy away from, but the time has come to address oneself to it. We need scientists who will look at this in a hard-nosed way and see what can be done about it.

Here and there in the literature there are clues. In the DNA molecule [the nucleic acid through which hereditary traits are passed from one generation to the next] there is, in a sense, the whole memory of a species. Everything that has gone before is now "taped," in the language of modern electronics, into the structure of that DNA. In the same sense, an antibody which fights a specific infection represents the body's memory of an invasion by foreign molecules of bacteria responsible for that infection. I see no reason why there cannot be a molecular basis for memory. I do not know that there is one, but I see no reason for rejecting the hypothesis out of hand. And it is time to start looking.

The fact has been established that there are large macromolecules, proteins of unknown structure, which accumulate in nerve cells with time. We do not know why. We do not know what they are doing, but it could just be that that is "memory" being tucked away. I do not know that this is so, but to ignore this phenomenon would be foolhardy.

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LETTERS TO THE SCIENCE EDITOR

MORE ABOUT THE SPACE BOMB

After reading the article in the April 6th issue entitled "The Facts About the 1962 Space Bomb," I have certain comments which may be summarized as follows:

1) I find the extravagant praise of my scientific contributions quite embarrassing, particularly so since they have been published in the scientific literature and are adequately recognized by my scientific colleagues.

2) The article supports a particular point of view on high altitude testing; the reader may be led to the conclusion that I hold the same views. This is not the case.

Then, there are some errors of fact in the article:

1) N. C. Christofilos proposed the firing of an atomic bomb in space in a classified document several weeks before Van Allen's discovery of the radiation belt, and several months *before* I published the proposal to study the radiation belt by means of electrons injected from a satellite-borne accelerator.

2 Far from being "fanatic in avoidance of any association of this idea with politics," I took my proposal, after publication, to the Pentagon, to NASA, and to just about anybody who I thought might support it. They considered the proposal favorably but did not concur with me on its importance.

3) My views on what would happen if a bomb is exploded in space *were* available to the Government; the article implies differently. The Atomic Energy Commission invited me to attend a meeting of experts on May 14, 1962. I presented and discussed my calculations there and eventually published them. I argued that the natural belt would not be disrupted as had been feared by some; this conclusion was based on my published studies on the behavior of naturally trapped protons which show that the belt is not appreciably disrupted by *naturally* occurring cataclysmic events due to the sun. (At that time, a majority of investigators would not have accepted this result; it is still not universally agreed to.) I also calculated that a certain large number of fission electrons would be injected by the bomb explosion, and that they would remain trapped for various lengths of time, some as long as fourteen years. This conclusion, again, was based on published studies I had made on the natural belts.

These studies convinced me that the effects of the space explosion would be "closely predictable, small, and harmless," and I still believe they are, for the following reasons:

1) Human activities, as the term is commonly understood, have not been affected. The increase in the belt intensity cannot, e.g., produce genetic mutations, except on people who actually are exposed to the environment in space. (This is in contradistinction to nuclear tests conducted *within* the earth's atmosphere, which produce fallout.)

2) Scientific exploration of the radiation belts has been advanced as well as held back by the addition of the new particles. The best judge of this are the scientists who are making the measurements and interpretations; it is interesting to note the large number of scientific papers which have been and are being published on the artificial radiation belts. (It is also worthy of note that the Russians have clamped down and have not released any of *their* measurements on *our* radiation belt.)

3) While some satellites have been damaged in their exposure to the artificial belt, others such as Telstar and Tiros have not. They had been over-designed, either by having a larger margin of safety on power, or by the use of some radiation shielding. It is clear, however, that the increase in the belt's intensity imposes an additional design burden on a satellite.

Having discussed specific scientific points, I would like to express some general views on the subject of high altitude testing, quoting here from my exchange with Lovell, published June 5, 1962 in the *London Observer*:

"I do agree with Professor Lovell on a matter of principle: that no government has the right to change the environment in any significant way without prior international study and agreement.

"It is quite apparent that differences of opinion are likely to arise over *which* environmental changes are 'significant.' It is hard to give general rules, but I would venture to suggest that actions which result in irreversible changes should be scrutinized in minute detail before they are carried out. I am convinced, and I trust other scientists will be convinced by available evidence, that nuclear tests in space do not change the environment 'significantly' in this sense."

Finally, there is one important matter which is only alluded to in the article, but deserves to be considered more deeply. Mr. Lear implies that the scientific discussion of the effects of nuclear tests in space could have been brought before a wider scientific audience much earlier. The basic physical considerations involved were certainly not classified. Therefore, our panel of experts could have been convened before May 14, and could have included at least a sprinkling of scientists from other countries. Not only would it have assured more balanced scientific advice to the Government, but also a better feeling of participation. I believe, myself, that the objections raised so forcefully by our British colleagues were partly provoked by the very real feeling of frustration of being "out" of important quasi-scientific, quasi-military experiments. Having been both "out" and "in," I know quite well how this feeling of frustration can develop, particularly when a scientist from the outside believes that an important aspect of a problem has been completely overlooked (as indeed, can and does happen). Contrasted with this is a smugness which sometimes develops among some "in" scientists, based on the feeling that people on the outside could not possibly know all of the details of the problem, and therefore, cannot really contribute. There is a lesson to be learned in this which should be valuable for the future.

S. Fred Singer.

Washington, D.C.

Editor's note: *To say that SR's report on the space bomb of summer 1962 "only alluded to" the desirability of global consultation in advance of planetary experiments is to throw the truth violently out of joint. In fact, the SR/Research report of last month was the second of two on the same subject. The first of the two appeared in June 1962 and was titled, "Does Anyone Have Squatter's Rights in the Sky?" That first report challenged the right of any nation to unilateral manipulation of the common environment of all peoples. The second report, published last month, documented the absurdity of scientists' claims to omnipotence in pre-judging the outcome of planetary experiments.*

The closing paragraph of Dr. Singer's letter above appears to place him in agreement with SR's position on the international consultation issue. But the extent of his concurrence would seem to be limited by his reference to "our" radiation belt, as though earth's magnetosphere or some particular part of it were a colonial possession of the United States. And it is not clear whether he would consult only on "irreversible" experiments or whether the consultations would determine what constitutes irreversibility. The latter, of course, is the vital question.

On the social and political problems created by scientific arrogance, Dr. Singer keeps a foot in both camps. He observes that "in" scientists tend to become smug, leaving the "outs" disgruntled. Being at present an "in," after a long period as an "out," he may perhaps be forgiven for falling into the normal pattern and insisting that planetary experiments are closely predictable. True, his own predictions have hit closer to the mark than the forecasts of most of his colleagues. But in fairness to the colleagues it must be noted that his most important differences with them on the 1962 space bomb were not spelled out in the text of his scientific papers but were buried in a statistical table and a graph. This is sound, cautious science. However, it isn't especially helpful to a worried populace.

The whole people is SR's audience, and SR's Science Editor has a responsibility to report from a broad public perspective. He has reviewed his space bomb summary of last month and cannot see where he attributed to Dr. Singer any view other than the view that the space bomb would have a lasting effect on the Van Allen belts.

Although Dr. Singer agreed with Dr. Bernard Lovell and Prof. Fred Hoyle in their demand for consultation prior to the decision to explode the space bomb, he opposed their contention that the bomb would disrupt the Van Allen belts with perhaps disastrous results. In this Dr. Singer was right. But it must be remembered

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that the bomb went off at an altitude of 250 miles instead of at the 500-mile height anticipated by Drs. Lovell and Hoyle. Whether Dr. Singer would still have been right about a 500-mile blast can only be guessed. The virtue of his position has been his willingness to consider pessimistic as well as optimistic probabilities.

Dr. Singer feels that SR's Science Editor has mis-stated the known facts about the influence of the Van Allen belts over human destiny. This is at least partly an argument in semantics. Dr. Singer is talking about immediate effects on individual health. The Science Editor is talking about more subtle and far-reaching consequences in genetics and climate. Two major facts have been established: The Van Allen belts do heat the upper atmosphere, and they do dump radiation into the atmosphere. Right now the atmosphere is voraciously eating up the shirt-tail of radiation that the space bomb hung into the Van Allen belts last summer. What the ultimate effect of the digestion will be, only time can tell.

One point raised by Dr. Singer's letter remains to be considered. It bears on the history of scientific discovery.

As was reported in SR/Research for February 3, 1962, Dr. James A. Van Allen of Iowa started on the road to fame by studying cosmic rays. In 1951, he fired some instruments aloft in rockets off Newfoundland and discovered that cosmic rays were bombarding earth in greater numbers at that point on the globe than either north or south of there. Dr. S. Fred Singer of Maryland read of this discovery in the scientific literature and concluded from it that particles of radiation must be trapped by earth's magnetic field outside earth's atmosphere.

Dr. Singer proposed to the U.S. Air Force that an effort be made to locate these particles. And the Air Force financed his design of a very large balloon that would carry a rocket to an extremely high altitude and at that height dispatch the rocket perhaps as far as 1,000 miles out from earth. This experiment was called "Project Farside." "Project Farside" failed, and Dr. Van Allen later discovered the trapped radiation which Dr. Singer had predicted. Dr. Singer then predicted that the trapped particles would be in two belts. He even set the dividing line between the belts. And Dr. Van Allen again confirmed that Dr. Singer had been right.

In his letter above, Dr. Singer correctly states that his predictions are widely accepted and respected amongst scientists —today. But it was not always so. Indeed, Dr. Van Allen's early research reports did not mention Dr. Singer. Even a Van Allen bibliography which purported to include everything worthwhile ever published on trapped radiation did not include Dr. Singer's name. Dr. Singer's work became established quite belatedly, and only after one of the elder statesmen of physics, Dr. Bruno Rossi, of Massachusetts Institute of Technology, placed it in proper perspective in a general review of man's present knowledge about trapped particles.

Since SR's Science Editor does not have access to classified documents, he cannot question Dr. Singer's statement that N. S. Christofilos proposed a space bomb before the Van Allen belts were discovered and before Dr. Singer's suggested investigation of trapped particles through use of an atom-smasher orbiting in an earth satellite. Whenever the space bomb was first advocated, it was adopted by the military in preference to the more peaceful and more exact atom-smasher. The intensity of preference is emphasized by what Dr. Singer here discloses concerning his repeated efforts to sell the atom-smasher idea.

Although he was one of the leading figures in that area of science, Dr. Singer was not consulted in the planning of the first space bomb, "Project Argus," over the South Atlantic in 1958. Nor was he consulted in connection with the "Starfish" bomb of 1962 over the Pacific until two weeks after the date of the explosion had been announced by the Pentagon and the Atomic Energy Commission. The American people still have not been told who was consulted before the announcement was made. Whoever they were, they did not warn of damage the bomb might do to satellites then orbiting, and no one who received their advice seems to have thought far enough to ask.

"Snelgrove, I admire your trying to improve humanity's lot. But would you mind pursuing the cure for the common cold on your own time?"

MORALITY IN SCIENCE

LET ME TELL YOU how very much I enjoyed reading your recent article on the troubles between the American Institute of Biological Sciences and the National Science Foundation. At the same time I was disturbed. As a former Associate Program Director with the NSF and as chairman of the AIBS Education Committee I have seen both of these very fine but imperfect organizations at very close range.

There are a number of sharp angles to this case which you omitted, and this is all to the good. However, there are aspects which you did cover but treated on the basis of what I feel sure must have been incomplete information. To be frank, your description of certain parts of the situation is so far off base that I think whoever talked with you or wrote to you about it did you a serious disservice and through you a disservice to your readers.

Specifically, point #4, in the right hand column of page 49 where you said, "public funds in the pot were diverted from their proper use for public research projects to finance a project designed to enrich the private coffers of AIBS" can only be described as grotesque. The funds in question were never research funds but rather funds designated for the AIBS curriculum study in Boulder or were overhead largely on the Boulder project. This diversion was made after the film series fell behind schedule. Perhaps someone regarded the Boulder study as research but this is certainly not research in any ordinary sense of the word and did not come from the research division of the NSF but from the Division of Scientific Personnel.

To say that the film series was "a project designed to enrich the private coffers of the AIBS" is a gross distortion of the facts and I very much hope that if you ever should have occasion to refer to this business again you will be able to do it with a more accurate picture of what really happened. For one thing, the coffers of the AIBS are private only in the sense of being non-governmental. They are coffers of a non-profit professional and scientific organization.

Furthermore, the statements near the bottom of the left column on page 52 ("Curricula took time to develop. Dr. Cox thought biology teachers ought to have immediate help. Classroom movies could do it. He persuaded the Ford Foundation and the AEC to finance the movies") simply do not square with the facts and I think exaggerates the role of Dr. Cox and indeed of the AIBS in the design and origin of the film series. The film series antedated the curriculum study and was initially supposed by the AIBS Education Committee to be completed by the time the big curriculum study was well started.

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A lot of people seem to have forgotten this but our minutes show this to be the case.

I remember the time when a Dr. H. Burr Roney of the University of Houston came before the AIBS Education Committee and explained to us his plan—and believe me it was HIS plan—for putting an up-to-date and exciting course in biology on film. It developed in the course of discussion that he had contacted the Ford Foundation people who had given him to understand, that the Foundation was ready to finance such a film project provided he, Roney, could get some organization like the AIBS to provide general scientific oversight and sponsorship. I think Hiden Cox *was* responsible for getting the AEC to add something to the fund. The Education Committee viewed some of Roney's films. The consensus after at least two or three meetings was that such a series of films would constitute an important means of strengthening the teaching of biology in American high schools both in the large number of schools where biology is taught by men or women trained in physical education, home economics, or some such fields, and in the very good schools as well where of course the use made of them would be rather different.

It would be at least partially true to say that these films were designed to do for biology what the Harvey White films were doing for chemistry or the PSSC physics films out of MIT by Zacharias were to do for modernizing physics teaching in our high schools. But to say that they were "designed to enrich the private coffers" does violence to the truth. At the very least, you can say that in addition to being designed to strengthen and update American high school biology they were assigned to a commercial firm (McGraw-Hill) for sale and distribution with an agreement that the committee hoped might possibly bring in a few royalties to the AIBS. This hope on the part of the Education Committee was surely no worse than the hope of any author that his books will bring in enough to live on. But for anyone to tell you that the films were designed for money and leave it at that is not even a half truth—it's a positive distortion.

I would like to say something about the change in plans for the films, in which I came to be involved. I think it is what is called an "open secret" that Dr. Roney's work, after several very painful and exceedingly prolonged delays, ground to a halt. At that time the whole project was over a year behind schedule, and the Steering Committee for the films (of which I was not a member) decided that, since Burr Roney was now out of the picture, I would be a good man to get the series started again. It sounded to me like an exciting challenge. It did not sound like anything that would ever bring in much to my private coffers. I and each of the replacements for Roney were to do a subject matter set of twelve films and get the same royalty as he got—one half of one percent, which is far different from the 15 per cent accorded to the authors of most scientific textbooks. The substitution of a series of continuing teachers, as we were called, for Roney did not greatly increase the costs except for our travel. We did insist (or most of us did) that we have more visiting scientists on our films in addition to ourselves. Bringing in these visiting scientists to do part of a film or most of a film in their particular fields did cost more. How much I do not know.

There are a number of other places where it seems to me you have been misinformed. For example, neither the AIBS Education Committee nor, so far as I know, any of the other AIBS committees receive anything but expenses when they meet. The expense voucher is patterned closely after that used by the NSP or perhaps it was the other way around. In any case, they are very similar. Actually I believe it was the NSF which started paying honorariums in addition to per diems.

GAIRDNER B. MOMENT,
Dept. of Biological Sciences,
Goucher College
Baltimore, Md.

EDITOR'S NOTE: *These corrections of detail are welcome. They do not, of course, alter the fact that public funds were diverted to non-public use. Professor Moment seems unaware that AIBS is incorporated as a private institution.*

BY ALL MEANS let Congress follow the suggestion Lear voices that Congress be advised on ways and means "to reassert intelligent control by society of the most powerful social force of modern times." Such advisement will demonstrate the merits of the AIBS programs which Lear dismisses as a "scheme to reform teaching of biology in American high schools," and others. Except for the School Mathematics Study Group's productions, no discipline has come near to achieving such genuine contributions to thoroughgoing modernization of secondary education.

Any careless handling of funds by AIBS in its preoccupation to realize genuine results subsides into insignificance alongside the massive wastages achieved by NSF in its summer institute subsidies. Helpful as these frequently have been to college professors to enable them to have a captive audience for courses that no one heretofore would take, they certainly are not invariably useful to upgrade school teachers.

I am not a biologist, actually as misplaced mathematician. My concern is the modernization of high school curriculum. In this effort, abetted by the nationwide studies mentioned a paragraph ago; no organization has been so helpful to hundreds of high school teachers as AIBS with its Biological Sciences Curriculum Study, film series, and visiting biologists' program.

FRANK B. LINDSAY, Chief
Bureau of Secondary Education
State of California.
Sacramento, Calif.

EDITOR'S NOTE: *An investigation into the National Science Foundation's spending has been started by the Science and Astronautics Committee of the U.S. House of Representatives. SR's Science Editor hopes that the committee chairman, George Miller of California, will examine the accusations made in the letter above as well as the question raised below.*

IT WAS WITH A GREAT deal of interest that I read your excellent article, "Morality in Science: Report on a Crisis," that appeared in the March 2 issue of *Saturday Review*.

I am troubled by the fact that very few biology teachers have read this report and know little or nothing about the crisis in the life of the AIBS except what they read in publications of the AIBS or the National Association of Biology Teachers. At a recent state science meeting for biology teachers, I could find only one person who had read your article; and he was a university teacher, not a high school teacher. I should like to urge that steps be taken to have this article repeated. Perhaps the *Education Digest* is a possibility.

As you may know, the BSCS is throwing their whole weight into the promotion of the text programs developed with AIBS money. Though I could be wrong, it appears that tax money is being used to promote the commercial versions of the three biology courses developed by the BSCS. The pressure being put on school administrators and teachers to adopt one of these programs is tremendous.

MALCOLM S. HAYDEN
Columbus, O.

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Music to My Ears

Continued from page 24

George Walton, though it cannot be said that there was serious competition from Ernest Blanc (Richard) or Raymond Michalski (Walter). Betty Allen was heard as Henrietta.

The problems that beset Paul Hindemith's Requiem *For Those We Love* (based on Whitman's "When Lilacs Last in the Dooryard Bloom'd") when it was first performed in the City Center in 1946 were not much alleviated in its production under the composer's own direction as guest conductor with the New York Philharmonic. It is long; it is thickly written for the chorus; it treads too narrow a range of coloristic values to absorb the attention through its hour-long course. There are stretches of the composer's authentic ability to use the tonal language expressively, especially the closing section through which resounds the mournful call of "Taps." I found it difficult to follow the text as it sounded where I was sitting, though George London's ability to articulate English is substantially stronger now than when (as George Burnson) he participated in the City Center premiere under Robert Shaw. Louise Parker did her work commendably. Both in this work and the briefly jubilant Psalm 150 of Bruckner (which brought the evening to a close, sans intermission, at ten), the placement of the chorus in tiers at either side of the stage in front of the orchestra muddied the instrumental sound, especially when it was joined by the organ. Martina Arroya added a brightly ear-filling effect as the solo soprano voice for Bruckner. —Irving Kolodin.

Booked for Travel

Continued from page 26

malaria, yellow fever, and dysentery, as well as the engineering obstacles that titillated the imagination first of Vasco Nuñez de Balboa, and later of Charles V of Spain, who ordered the first investigations of a man-made strait as early as 1523. At the time of the signing of the treaty, the United States agreed to guarantee the freedom of the new republic, to pay it $10,000,000 and an annuity of $250,000. This figure was increased to $430,000 in 1936, and to nearly $2,000,000 in 1955. Despite the seeming equity of the arrangement, which is supposed to exist in perpetuity, there are factions in Panama that increasingly agitate for "the return" of the Panama Canal. The brazen Egyptian nationalization of Suez and its subsequent successful operation have undoubtedly transfused new corpuscles into hot-blooded veins of the nationalists. But then, in some quarters we are also blamed for the continued presence in Panama of the descendants of Jamaican laborers who were imported to help build the canal. The U.S. brought them there, and the U.S. never did anything to bring them home, some Panamanians claim. The Jamaicans still speak traditional calypso-intoned English and are roundly disdained by Spanish-speaking Panamanians, particularly Panamanian Negroes. Only in some quarters is it recalled that the effort to rehabilitate the Jamaicans was blocked by Panamanian landlords who had grown accustomed to the fat rents the Jamaicans paid for the flimsy frame houses in downtown Panama City in which they lived.

It might seem, on the face of it, that the canal is a giant profit-making machine. Thirty ships a day pass through, each of them paying ninety cents per ton of available cargo space or seventy-two cents a ton if empty. The average cost per passage is $5,000, with some large tankers paying as much as $30,000, plus tug fees at $90 an hour, but the savings to the shipping line in fuel and time, compared to the cost of circling Cape Horn, is enormous. The Panama Canal Company expends 52,000,000 gallons of water on each ship it puts through the set of locks, half of it flowing into the Atlantic, half into the Pacific, and all of it lost. The water supply flows, gravity-powered, from Gatun Lake and Madden Lake, 250 feet above sea level, which are in turn fed by the enormous rainfall of the highlands.

Although the annual take at the canal's cashier's desk is about $100 million, the Panama Canal Company, really a part of the U.S. Government, is a non-profit venture, pouring all its funds into maintenance and improvements. Lights along the edge of the waterway now permit passage at night. Although thirty-five of the original General Electric locomotives, called mules, that run along the side of the canal are still operating, the company is now buying some new models. The order was let to the manufacturers offering the best bid, and these new replacements are coming not from G.E. but from Japan. Halloo, up there on Capitol Hill. —Horace Sutton.

LITERARY I.Q. ANSWERS

Column Two should read: 4, 13, 15, 6, 7, 1, 5, 14, 12, 3, 10, 2, 9, 8, 11.

If you love children, your heart will go out to Tommy Littleraven, a 9-year-old American Indian boy who is attending school off the reservation for the first time. Going to school in town frightens Tommy. He is afraid that his non-Indian schoolmates are laughing at his tattered clothing, at his faulty English.

He yearns to join the school club, buy personal books, clothing, go out for a soda with the other boys. But his parents are too poor to give him pocket money. And so Tommy wanders off by himself and dreams that someday he will have the money to do what his non-Indian schoolmates do.

if you love children

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PERSONALS

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(Continued on page 56)

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HOUSES AVAILABLE

For Sale

(Continued from page 55)

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HOUSES WANTED

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Unfurnished

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SUMMER READING-STUDY Skills Camp. Students with good potential yet underachieving. Perfect setting for a profitable summer study and recreation. Harry Purchase, Director, The Wawbeek, Upper Saranac Lake, New York.

NEW HORIZON at Southampton, N.Y. A Children's Democracy. All activities. Brochure. 9 East 67th Street, NYC 21. TRafalgar 9-5221.

CAMP ELLIOTT. Democratic Community Living. Work, study, recreation. Coed 14-16. $150 per 3 week session. Brochure and application from Ethical Culture Society of Bergen County, 687 Larch Avenue, Teaneck, New Jersey. 201-TE 6-5187.

RETIREMENT LIVING

TIDEWATER, VIRGINIA—The most complete list of waterfront properties available in Virginia. Free booklet—"Virginia." G.B. Lorraine, Broker, Richmond Federal Building, Richmond, Virginia.

VACATIONS

LIKE SWIMMING, GOLF, SPORTS, excellent meals? You'll thoroughly enjoy vacationing at this delightful country inn. All sports on our 250 acre estate. Informal social events. $12-$18 day includes meals. Open all year. Recommended by AAA. For color folder, reservations write Edwin Finch, Manager, The Northfield, East Northfield 46, Massachusetts.

REFRESHINGLY MAINE — Overlooking ocean, beach. Art colony, theatre. Informal, excellent food. Brochure. Hillcrest Inn, Ogunquit 2, Maine.

MEXICO — American Plan, from $4.00. Each bedroom with bath, fireplace. Full information: La Quinta, Jocotepec, Jalisco.

RELAX. Enjoy your vacation—quiet, unspoiled land and waters of Maryland's eastern shore. Colonial charm, finest food. The Pasadena, Royal Oak, Maryland.

EXCEPTIONAL MEALS at one of New England's foremost resort hotels. Swimming pool, private beach, on beautiful Ogunquit headland. Opens June 24th. Color folder. The LOOKOUT, Ogunquit 2, Maine.

FAMILY VACATION! Aloha Manor, Lake Morey, Fairlee, Vermont. Child sleeps with parents or in camp (2-16 years). Swimming, sports, trips. Free pony riding. Excellent food. Golf nearby. Booklet. Mrs. Harriet Gulick Pierce, Box S. 531 East 20th, New York 10, GRamercy 3-0222.

VACATIONS

PAINT AND VACATION in Maine with Mark and Bonnie Lehman. August. Brochure. Box C-436.

NATURE LOVERS, creative people. Find peace, quiet, beautiful scenery, charming old-world home, Individualized cooking. "House on the Hill," Worcester, N.Y., near lovely Cooperstown.

THE CLIFF HOUSE AND MOTELS, Bald Head Cliff, Ogunquit 5, Maine. Swimming pool. Quiet, informal. Cocktail lounge. Social and sports activities. Reasonable with or without meals. June to October 15th. Brochure. Maurice Weare, Manager.

LUDLOW LODGE, leisurely living in a little village. Ludlow, Vermont.

AKERMAN HOUSE. Newfound Lake. Real hospitality in a country setting. Near sandy bathing beaches. Ideal for families. Some rooms with bath. Reasonable rates include three delicious meals daily. Bristol, New Hampshire. Telephone 4-5734.

GOLFING APLENTY at Sky Lodge and Motel . . . informal, complete resort. Swimming pool, archery. Excellent food, cocktails. Two miles north of Jackman on picturesque Arnold Trail. Ed Landgraf, Moose River, Maine.

LAKE ST. CATHERINE INN, Poultney, Vermont, ATlantic 7-9371. Lakefront dream spot. Great fishing, boating, swimming, tennis, golf. Congenial, informal. Low June rates, Decoration weekend. American-Jewish Cuisine.

UP-ISLAND on Martha's Vineyard, you're away from frantic joy-mills, free as a gull. Picturesque harbor to paint, beautiful beaches, tennis, cycling, scholarly retreats. Modern cottages for 2 to 6 guests. New England home cooking at its best. Lower June rates. Menemsha Inn, Menemsha 5, Massachusetts.

FARMS AND HOTELS for adults and families, near New York. Call LOrraine 8-0700 NYC.

PICTURE-BOOK VILLAGE off beaten path. Relaxing historic Inn. Small-town events. Pool, 5 acres grounds, brook. Folder. The Tavern, Grafton, Vermont.

SHAWMUT INN. Oceanfront resort. Secluded, restful, informal. 32 rooms, 16 cottages. Chalet Motor Lodge. Heated pool. Fine food. Cocktails. Open May 24th. Kennebunkport, Maine.

EAGLE MOUNTAIN HOUSE—Jackson 16, New Hampshire. Overlooks Wildcat Valley. Square mile estate with golf, swimming pool. All summer sports, social program. Excellent meals. June 29th-October 15th. Color folder.

THE MANOR in Asheville, North Carolina, welcomes creative people. Pleasing rates, beautiful surroundings.

COLONIAL CHARM midst wooded Litchfield Hills. Trout stream. Casual, intimate; luscious food. Swimming pool—horses, golf, lake nearby. Country auctions, summer theatre. Lewis & Mary Fisher, Bantam, Connecticut.

VERMONT HOUSEKEEPING June and September: "Snug Harbor" (4 rooms over boathouse) or "Currier & Ives" Suite (3 rooms). Free boats, canoes, sailboats, tennis. Near golf, horses, White Mountains. Write Gulick Pierce, 531 East 20th Street, NYC 10.

ON THE HERITAGE TRAIL . . . New England hospitality in modern setting at congenial, complete White Mountain resort. Prize-winning chef. The New England Inn, Intervale 9, New Hampshire.

HOTEL PLAYA MAZATLAN, directly on beautiful tropical beach. Excellent International cuisine, best in Mexico. $16.80 double occupancy, A.P. Mazatlan, Sinaloa, Mexico.

YOU CAN HAVE IT ALL—the beauty, the peace, the superb food, the friendly, informal atmosphere. Winhall Mountain Lodge, Manchester, Vermont.

SAN FRANCISCO ON A BUDGET? Charming, centrally located. Hotel Beresford, 635 Sutter Street.

PISGAH INN on Blue Ridge Parkway at Mt. Pisgah. High, cool, rustic comfort. Open fires, forest trails, marvelous views. Since 1920. R-2, Box 375ASR, Canton, N.C.

VACATIONS

NANTUCKET, fascinating island 30 miles at sea, yet only one hour by air from New York or Boston: Miles of white sand beach, surf bathing (Water averages 72°), golf, sailing, all your favorite sports, varied entertainment. Modern hotels, inns, guest houses. Excellent restaurants. Free illustrated booklet. Information Service, Nantucket 16, Massachusetts.

HARBOR BY MOONLIGHT: moored boats gleaming whitely, the moon-path glistening to the horizon, the small voices of the sea as it laps the land. The Island Inn, Box D, Monhegan Island, Maine. Mainland garaging for all cars.

PINKHAM NOTCH INN—A secluded Alpine inn of rare charm at the foot of Mt. Washington in the White Mountain National Forest. Enjoy your leisure, superb mountain climbing, swimming and outdoor sports in an idyllic setting. $10-$16 American Plan. R. P. Whipple, Mgr., Jackson 3, New Hampshire.

CAPE COD. Attractive guest house overlooking Nantucket Sound. Excellent swimming. Breakfast if desired. Good restaurants, golf, shops, theatre. Open mid-May to October. Write Elmore Biggs, Shore Pines, Harwich Port, Massachusetts.

PEMAQUID SEMINAR. 7th year: Stimulating and informal vacations for thinking people. Writing, lectures, discussions. For 1963 pamphlet write: Box 386, Damariscotta, Maine.

SNOWBIRD MOUNTAIN LODGE, Robbinsville, N.C. Exotic mountaintop location bordering Great Smokies. Small, secluded, informal. American Plan. No cottages. Folder.

WATERVILLE INN—For nearly a century a resort unchanged in its essential character. In the White Mountain National Forest. Comfortable Inn, golf course, swimming, tennis and miles of pleasant hiking trails along streams and cascades. Folder. Advance reservations requested. Waterville Valley, Campton P.O., New Hampshire.

WORLD-FAMOUS FISHING PORT and vacation area on cool, picturesque Cape Ann. Beaches, fishing, boating. For pictorial, informative folder write City Manager, Gloucester 5, Massachusetts.

OGUNQUIT. Famous summer vacation center. Magnificent beach, majestic cliffs, camera fans' dream. Many activities. Artists' colony, summer theatre, deep-sea fishing, golf, movies. Hotels, guest houses, motels, cottages, restaurants. For information write Information Bureau, Ogunquit 15, Maine.

THE BROOKFIELD CRAFT CENTER. Enjoy a vacation studying handcrafts with nationally-known instructors. Delightful surroundings. Write for brochure. Brookfield, Connecticut.

BLUEBERRY HILL! Apple blossoms! Nothing whatever to do. Lucullan food. The Mastertons, Brandon, Vermont.

SEASHORE? Colonial Inn and Motel. Elevator. Informal. Folder. Ogunquit 5, Maine.

WHITNEYS' . . . Charming Inn off beaten path. Rooms, Cottages, Motel. All seasonal sports. Famous food. AAA. Open Summer and Winter. Folder tells all. Bill & Betty Whitney, Jackson 10, New Hampshire.

THE IMPROBABLE INN for artists (and compatible personnel) 21-40 years. Lodging, studios, one-world cuisine. $50 weekly. Bay Street Studio, Boothbay Harbor, Maine. Brochure!

ENJOY YOUR VACATION with your family at a New England lakeside resort. All facilities. American Plan or housekeeping cottages. Forrest Durkee, Wolfeboro 18, N.H.

ROCKPORT. You will love this photoscenic year 'round New England seacoast town. Sea birds, flowers, the leisurely pace, rockbound coast and clear, crisp air appeal to artists, photographers and vacationers. For free guidebook write: Board of Trade, Rockport 2, Massachusetts.

GOOSE COVE LODGE on Deer Isle, Maine. In East Penobscot Bay. Sailing, fishing, hiking and picnics. Trained naturalist for nature lovers. An artist's paradise. Write for brochure. Dr. R. A. Waldron, Owner-Manager, P. O. Sunset, Maine.

(Continued on page 58)

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VACATIONS

(Continued from page 57)

CANOE TRIPS OUTFITTED—everything furnished, $6.50 daily. Beautiful wilderness country. Free information: Border Lakes, Box 569-V, Ely, Minnesota.

"OUT OF THIS WORLD"—An uncrowded lake area—Vermont's Northeast Kingdom. Main lodge, recreation building for dining, sociability, entertainment. Guest cottages. Boats on 4 lakes. Every water sport. Real fishing. Fine riding, tennis. Memorable meals, pleasing service, every comfort. Quimby's Inn and Cottages, Averill 4, Vermont.

MESSALONSKEE BEACH COTTAGES. Housekeeping, lakefront. Fish, play, relax. Belgrade, Maine.

GREEN SHADOWS INN, Old Lyme, Connecticut. Excellent food, beautiful country. Rooms and cottages.

WENTWORTH WORKSHOP—paint and vacation in New Hampshire. Brochure. Box B-576.

PEACE . . . PRIVACY . . . MARTHA'S VINEYARD! Writers, painters, naturalists especially welcomed. Housekeeping cottages available at Horizon Murals, RFD, Vineyard Haven, Massachusetts.

TENNIS: 4 Clay Courts. Sun-drenched Florida Keys. Write: Hawthorne Bissell, Islamorada, Florida Keys.

KANDAHAR LODGE, MANCHESTER, VERMONT. Beautiful vacationland in a setting of rare, natural beauty. 2,150' high in the Green Mountain National Forest. Restful, informal, sports. Heated swimming pool. Private pond, trout fishing. Excellent food, accommodations, genuine hospitality. Brochure. Sue & Alex Zoesch invite you.

MONADNOCK REGION. Beauty, charm, relaxation, towering pines, swimming pool, shuffleboard, your own lodge, delicious meals. Open mid-May to mid-October. Write Palmer Lodge, Keene 4, N.H.

RIVERSIDE HOTEL-MOTEL. Informal seaside relaxation. Bountiful meals. Near beach, art colony, golf. Moderate rates. Color folder. Ogunquit 2, Maine.

CHILOWAY LODGE, Roscoe, New York. Secluded, informal country lodge. Limited to 30 guests.

ISLAND VIEW HOUSE, on beautiful Casco Bay. Chebeague Island, Maine. VI 6-4059. Brochure.

WRITERS: Make your vacation profitable! Mildred Reid, Contoocook, New Hampshire.

IF I WERE A BIRD, I'd fly the coop and zero in on Montauk. All the birds are making it a habit at Montauk. The reason: Freedom. The azure sky, singing and sandy bluffs. And for people, there's Gurney's Inn. Excellent cuisine, gracious hostelry, charming cottages, pampering servants. Write Dept. S-3, Gurney's Inn, "On the Brink O' the Beach" at Montauk, L.I., 516-MO 8-2345.

HIGHLAND LODGE AND COTTAGES—180 acres of fun and relaxation on beautiful Caspian Lake, Greensboro, Vermont. Open Spring, Summer and Fall.

LOVELADIES HARBOR, Long Beach Island, N.J. Houses for sale and for rent; summer and year-round. See our ad under "Houses for Sale."

FISH AND VACATION at Libby's on Spednic Lake, Vanceboro, Maine.

CRESTMONT INN, 95 Lake Drive, Eagles Mere, Pennsylvania. Perfect family vacation spot. Natural lake. Tot, teenage directors. Par-3, 18-hole golf. Modern rooms, cottages. Fine meals. Moderate rates. Off beaten path; easy to reach. June 14th-September 16th. Folder.

LAKE SHORE FARM—Boating, fishing, swimming, private beach, children's haven. Northwood, N.H.

LA ORILLA, Islamorada, Florida Keys. Villas for lazy living. Quiet, tropical Paradise. Day-Week-Month.

NASSAU, BAHAMAS—Ocean Spray Guest House. Facing beach. $5 single, $7 double. Box 1558, Nassau.

CHRISTMAS TREE INN. AAA. Deliberate informality. Lakeside resort with private cottages nestled in pines. Central dining room and lodge. Excellent meals. Sandy beach, good fishing. Open June to September. Bridgton 5, Maine.

TRAVEL

SAVE MONEY ON YOUR NEXT TRIP to New York. New York is inexpensive if you don't insist on running with the herd. Stay at the Hotel Paris and use our folder: "New York for Free." All rooms with bath; free swimming pool; family rates. Write to M. L. Walter, Hotel Paris, New York 25.

EASTERN EUROPE. New, colorful folder, free for the asking, describing five different conducted tours through Russia, the Balkans, and Scandinavia. Write Maupintour, Folder SEE, 400 Madison Avenue, New York 17.

GREENWICH VILLAGE, U.S.A. Stay at the Hotel Albert, East 10th Street and University Place, NYC. Kitchenettes available. Moderate rates. Call ORegon 7-0100.

HOLIDAY SCHOOLS ABROAD—unique, international six-week school-camp summer programs. Coed, 14-18. Switzerland, Israel, England—$895. Write/phone: Ruth Faine, Holiday Schools Abroad, Room 3100, 11 West 42nd, NYC 36, OXford 5-1360.

RENAISSANCE ART IN FLORENCE. Bucknell University professor. Three credits available. Excursions. Six weeks $690. U. S. National Student Association, Dept. F, 20 West 38th Street, New York 18.

EXPEDITION—'ROUND THE WORLD' BEING FORMED. Famed 190' Schooner "YANKEE CLIPPER" embarks January '64 on 12 month voyage to Galapogos, Pitcairn, Tahiti, Orient, the World. Applications now being accepted for congenial shipmates to share adventure and expenses (about $12 per day). Write Capt. Mike Burke, P.O. Box 1051, Dept. 23-R, Miami Beach 39, Florida.

THE TRAPPINGS ARE NEW but the rates are traditional at the Tudor Hotel in New York City. Comfortable accommodations, all with private bath. Weekly and monthly rates on request. Convenient to all transportation, restaurants, churches, shops, art, theatres, etc. Located in fashionable Tudor City, adjacent to United Nations. Write Mr. Earl R. Powers, Manager, Tudor Hotel, 304 East 42nd Street or phone 212-YU 6-8800.

OFF BEAT, INTERNATIONAL—the excitingly different travel service—the place to go is not always the place in the know. OBI, Box 5793, Sherman Oaks, California.

CAMERA AND ART CRUISES to the South Seas aboard SS Mariposa. Cruise 42 days in Matson luxury visiting Bora Bora, Tahiti, Fiji, Pago Pago, Noumea, Australia, New Zealand, Hawaii. Camera Cruise highlights seminars and workshops in all phases of photography with noted photographer, Vince Pincetich. Sailing August 29th San Francisco; next day Los Angeles. Art cruise features daily study in water colors, oils, charcoal, all media, with famed artist, Vincenzo . . . plus special field trips ashore. Sails November 28th San Francisco; next day Los Angeles. See your travel agent or Matson Lines, 215 Market Street, San Francisco.

SEBAGO-LONG LAKES REGION. Pine-clad mountains surround Maine's most accessible lakes region. Seacoast cities nearby. Magazine in color free. Sebago-Long Lakes Association, Sebago Lake 16, Maine.

PHILADELPHIA (on Penn Campus in "University City"). See famed African primitive sculpture at University Museum; new buildings by Eero Saarinen, Louis Kahn. Theatres, Philadephia Orchestra, Barnes Foundation. $5 single, $7 double, none higher, all private baths. NEW MARLYN HOTEL, Walnut at 40th, Philadelphia. 215-EVergreen 6-7100.

SAN JUAN, PUERTO RICO. Consider The Duffys', a tropical guest house by the sea. Excellent beach. Gemuetlichkeit bar. Casual island atmosphere. Box 12232, Loiza Station.

MEXICO—From Acala to Zoquiapan, "Terry's Guide to Mexico" has been a major institution in tourism for over 50 years. Now completely updated for the modern traveler. Absolutely encyclopedic. $5.95 at bookstores, Doubleday.

VAGABOND VOYAGES UNDER SAIL—Longing for Tahiti? There's a South Seas Paradise within reach of your vacation schedule—and checkbook! Beachcomb tropic islands of Bahamas with me aboard magnificent 150-foot schooner, "TROPIC ROVER." Informal 10-day cruises, from $175. Capt. Sid Hartshorne, Dept. 10F, 2010 S.W. 16th Court, Ft. Lauderdale, Florida.

SUMMER IN EUROPE? A memorable tour. Fascinating, unrushed itinerary. Ages: 19-33. Box C-424.

TRAVEL

STUDENT TRAVEL STUDENTS CAN AFFORD. 35 exciting itineraries, 35-60 land days, from $660 (including transportation). U.S. National Student Association, Dept. SR, 20 West 38th Street, New York 18.

NEW YORK CITY, HOTEL BEDFORD, 40th Street, just east of Park Avenue. For the discriminating guest who prefers quiet and privacy in the midst of town. Spacious air-conditioned accommodations with private bath, television and pantry. Superb restaurant and cocktail lounge. Family Plan and monthly rates available. Write Dept. SR for brochure.

"MEDITERRANEAN HOLIDAY" CRUISES offer the trip of a lifetime at amazingly low cost! Elegant Italian Line steamers—Colombo, Saturnia, Vulcania—feature unexcelled cuisine and service, thrilling ports of call, plus glamorous stay ashore in Italy. 35-41 days, from $595 each for room with bath. Monthly departures. For brochure, Columbia Tours, Inc., 590 Fifth Avenue, NYC 36, COlumbus 5-2600.

SPICE—Society for the Promotion of International Cultural Exchange. Quality tours to Europe, Near East and Around the World. 21 to 60 days, with professional educators as instructors and escorts. College credit optional. Write to SPICE, University of Miami, P.O. Box 8111, Coral Gables 46, Florida.

A WEEKEND IN NEW YORK AT BEEKMAN TOWER HOTEL is the greatest! New, special package rates for two- and three-day visits are available. Write or call for information. If you're driving, ask for the road map showing how to avoid city traffic. You'll be near everything—steps from the United Nations, theatres, shops, museums and art galleries. Two excellent restaurants serve delicious food at moderate prices. The fascinating Top o' the Tower Cocktail Lounge offers magnificent views of the East River and the city as well as expertly prepared refreshments. Don't miss the fun! BEEKMAN TOWER HOTEL, 49th Street and 1st Avenue, New York 17, 212-EL 5-7300.

FREIGHTER TRAVEL. Ford's Freighter Travel Guide book gives complete information on hundreds of lower cost trips you can take on passenger carrying freighters from U.S. and Canadian seaports to all parts of the world. New 21st edition shows where they go, how long they take, what they cost, gives addresses of Steamship Lines, everything needed for planning vacation travel. 112 pages fully illustrated, price $2.75 postpaid. (No C.O.D.s). Ford's Freighter Travel Guidebook, Dept. 19, 2031 Glendon Avenue, Los Angeles 25, California.

HENRY HUDSON HOTEL, 353 West 57th Street, NYC. Single rooms, private bath. $26 per week. Bus, subway at corner. Swimming pool. COlumbus 5-6100.

2 UNUSUAL TOURS—Russia by motor coach. 18 days from London, $290. Capitals of Europe including Prague, Vienna, Budapest. 28 days from London, $452. Write for literature. Frames' Tours Ltd., 114 East 32nd, NYC 16. Book ONLY with your local agent.

WANT TO JOIN knowledgeable group from Big "D"? 31 days, Europe, Egypt (includes Greece). The Tour That Has Everything! Leaving New York July 4th. Brochure: Grace Gage, 6602 Oriole, Dallas, Texas.

333 EUROPEAN HOTELS, most under $5. Prices, addresses, $1.00. Bon Voyage, Box 24684x3, Los Angeles 24, California.

PUTNEY SCHOOL is sponsoring two study trips for high school students: Japan, $1,500, and Sweden-Russia, $1,250. Summer adventure combined with learning about other people in other lands. For information write: Putney Study Travel, Putney School, Putney, Vermont.

SOUTH AFRICA INEXPENSIVE? Emphatically yes! A "grand tour" of Johannesburg, Pretoria, Kruger Park, Cape Town, Durban, plus visits to tribal villages and other fascinating highlights, costs only about $25 per day! See South Africa yourself for the greatest travel experience of your life. Modest safe travel fully described in Satour literature, Dept. P., 610 Fifth Avenue, New York 20.

CAMPING TOUR TO JERUSALEM by motor coach leaving Paris July 1st via Vienna, Belgrade, Istanbul, Troy, Beirut and return August 28th. Route of the Crusades. Information: Tel-Star Tours, 396 49th Street, Oakland 9, California. Telephone 652-2920.

EUROPEAN TRAVEL FOR GIRLS. Eight weeks. Residence in Florence. Trips to Switzerland, Austria, France. Leisurely visits to cities and small villages. Live with families while on tour. Sail on "Homeric." All-inclusive price, $1,500. Ten girls only. Three instructors. Charles Harrell, Headmaster, The Sea Pines School for Girls, East Brewster, Massachusetts.

JOURNEY TO YESTERDAY—all-rail steam train excursion June 1st-8th, Chicago to Silverton, Colorado. Ride thrilling narrow-gauge lines in Colorado. Coach and Pullman with vista domes. Contact Illini R.R. Club, P.O. Box 62, Champaign, Illinois.

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KINGSLEY DOUBLE-CROSTIC NO. 1517

Reg. U.S. Patent Office

By Doris Nash Wortman

DEFINITIONS

A. Struthioid.

B. Glittering prospect of London, apostrophized by the poet as he cried, "What fortunes lie within you!" (3 wds.).

C. Free from dissimulation; naive.

D. Appearance of truth; probability.

E. Slight convexity in the shaft of a column (only 3/8 inch on each side of columns in the Parthenon).

F. Nickname for General Zachary Taylor (after "Old"; 3 wds.).

G. Our moments when we find Woman "uncertain, coy, and hard to please" (3 wds.).

H. Settles by decree after trial of all aspects, causes, etc.

I. Raised floors for the Levantine cushions forming the divans (one of several spellings).

J. Huge; ponderous; ungainly.

WORDS

66 46 212 176 55 35 144 109 73 135 202

112 193 154 150 204 167 122 70 92 38 1 89

209 136 22 98 74 129 166 111 57

147 52 207 198 124 87 117 90 108 29 10 171 77 137

44 50 174 26 184 15 178

160 88 203 210 62 21 199 169 192 146 23 132 104

173 162 191 82 53 9 106 118 40 19 168

170 14 33 81 4 51 64 45 179 196 20

43 175 164 34 27 7

6 116 84 71 195 142 39 125 24 30 159

DEFINITIONS

K. Acts of financing commercial ventures, bond issues, etc.

L. Said of a book containing removable sheets (comp.).

M. Specifying live cattle (3 wds.).

N. Sorcery.

O. The year of destruction of the Holy Roman Empire, by treaty of Lunéville (2 wds.).

P. Important timber conifers of the California coast (2 wds.).

Q. Kingly locale where, Portia said, mercy is enthroned (3 wds.).

R. Opposite number to *aurora australis* (2 wds.).

S. Smollett's admiring nickname for Dr. Johnson (2 wds. followed by *of Literature*).

T. Specifying the N. Amer. hawk which often attacks poultry (comp.).

WORDS

60 115 69 157 72 163 153 183 208 194

152 18 141 68 49 59 101 75 113

161 13 140 155 206 126 3 5 110

102 37 200 85 180 143 182 96 11 61

47 177 121 211 99 185 58 76 93 189 151

83 32 48 186 105 128 197 120 65 42 63 138

12 16 149 54 148 201 95 187 78 36 67

119 190 134 205 100 181 127 25 17 145 172 165 86 188

130 31 79 107 156 97 2 133 56

139 158 103 41 94 80 131 114 8 91 123 28

DIRECTIONS

To solve this puzzle you must guess twenty-odd WORDS, the definitions of which are given in the column headed DEFINITIONS. Alongside each definition, there is a row of dashes—one for each letter in the required word. When you have guessed a word, write it on the dashes, and also write each letter in the correspondingly numbered square of the puzzle diagram. . . When the squares are all filled in, you will find that you have completed a quotation from some published work. If read up and down, the letters in the diagram have no meaning. . . Black squares indicate ends of words; if there is no black square at the right side of the diagram, the word carries over to the next line . . . When all the WORDS are filled in, their initial letters spell the name of the author and the title of the piece from which the quotation has been taken. Of great help to the solver are this acrostic feature and the relative shapes of words in the diagram as they develop. Authority for spellings and definitions is Webster's New International Dictionary, Second Edition.

						1 B	2 S	3 M		4 H	5 M	6 J	7 I		8 T	9 G	10 D	
11 N	12 Q	13 M	14 H		15 E	16 Q		17 R	18 L	19 G	20 H		21 F		22 C	23 F	24 J	
25 R		26 E	27 I	28 T		29 D	30 J		31 S	32 P	33 H	34 I	35 A	36 Q	37 N	38 B	39 J	
	40 G		41 T	42 P	43 I	44 E	45 H	46 A	47 O		48 P	49 L	50 E	51 H	52 D	53 G		
54 Q	55 A	56 S	57 C	58 O	59 L	60 K		61 N	62 F	63 P		64 H	65 P	66 A	67 Q	68 L		
69 K	70 B		71 J	72 K	73 A	74 C		75 L	76 O	77 D		78 Q	79 S	80 T	81 H	82 G	83 P	
84 J	85 N	86 R	87 D	88 F	89 B		90 D	91 T	92 B	93 O		94 T	95 Q	96 N	97 S	98 C		
99 O	100 R	101 L		102 N	103 T	104 F		105 P	106 G		107 S	108 D	109 A		110 M	111 C	112 B	
113 L	114 T	115 K	116 J	117 D	118 G	119 R	120 P		121 O	122 B	123 T	124 D		125 J	126 M	127 R	128 P	
129 C	130 S	131 T		132 F	133 S	134 R	135 A	136 C	137 D	138 P	139 T		140 M	141 L		142 J	143 N	
144 A	145 R	146 F	147 D	148 Q		149 Q	150 B	151 O		152 L	153 K	154 B	155 M	156 S		157 K	158 T	
159 J		160 F	161 M	162 G	163 K		164 I	165 R	166 C	167 B	168 G		169 F	170 H	171 D	172 R	173 G	
174 E	175 I	176 A		177 O	178 E		179 H	180 N	181 R		182 N	183 K	184 E	185 O		186 P	187 Q	
188 R		189 O	190 R	191 G	192 F	193 B	194 K	195 J	196 H	197 P		198 D	199 F		200 N	201 Q	202 A	
	203 F	204 B	205 R	206 M	207 D		208 K	209 C	210 F	211 O	212 A							

Solution of last week's Double-Crostic will be found on page 9 of this issue.

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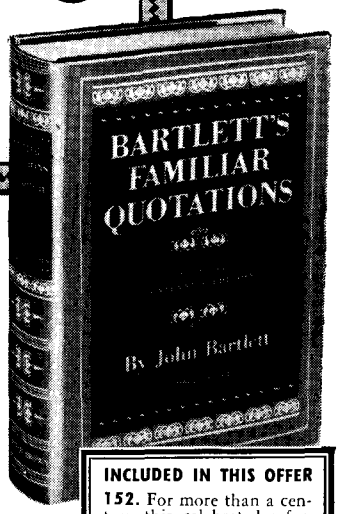

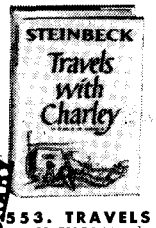

553. TRAVELS WITH CHARLEY *by* JOHN STEINBECK (Publisher's retail price $4.95)

567. THE SAND PEBBLES *by* RICHARD MC KENNA (Publisher's retail price $5.95)

575. THE TIN DRUM *by* GUENTER GRASS. (Publisher's retail price $6.95)

563. FAIL-SAFE *by* EUGENE BURDICK *and* HARVEY WHEELER. (Publisher's retail price $4.95)

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